

Resume

Yuri B. Shtessel



OFFICE:

301 Sparkman Drive
Department of Electrical & Computer Engineering
The University of Alabama in Huntsville, Huntsville
Alabama 35899 USA
(256) 824-6164 (voice), (256) 824-6803 (Fax)
email: shtessy@uah.edu
<https://www.uah.edu/eng/departments/ece/faculty-staff/yuri-shtessel>

CITIZENSHIP: USA

EDUCATION:

Ph.D. - (Electrical Engineering) - dissertation title "*Multiple criteria optimal control problems in autonomous systems of electric power supply*," Department of Automation and Remote Control, the South Ural State University, Chelyabinsk, Russia, 1978.

MS - (Electrical Engineering) - thesis title "*Optimization of parameters of automatic control systems interconnected through a common source of power supply*," Department of Automatic Controls, the South Ural State University, Chelyabinsk, Russia, 1971.

EMPLOYMENT:

2021-present	<i>Adjunct Professor</i> , Ecole Centrale de Nantes, Nantes, France.
2020-present	<i>Distinguished Professor Emeritus</i> , Department of Electrical & Computer Engineering, the University of Alabama in Huntsville, Huntsville, AL USA
2015-2020	<i>Distinguished Professor</i> , Department of Electrical & Computer Engineering, the University of Alabama in Huntsville, Huntsville, AL USA
Fall 2006	<i>Professor, Interim Chair</i> , Department of Electrical & Computer Engineering, the University of Alabama in Huntsville, Huntsville, AL USA
2002-2015	<i>Professor</i> , Department of Electrical & Computer Engineering, the University of Alabama in Huntsville, Huntsville, AL USA
1993-2002:	<i>Associate Professor</i> , Department of Electrical & Computer Engineering, the University of Alabama in Huntsville, Huntsville, AL USA
1991-1993:	<i>Adjunct Professor</i> , Department of Electrical & Computer Engineering, and Department of Mathematics, the University of South Carolina, Columbia, SC.
1983-1991:	<i>Associate Professor, Deputy Department Chair for Research</i> , Department of Applied Mathematics, the South Ural State University, Chelyabinsk, Russia.
1981-1983:	<i>Associate Professor</i> , Department of Applied Mathematics, the South Ural State University, Chelyabinsk, Russia.
1979-1981:	<i>Assistant Professor</i> , Department of Applied Mathematics, the South Ural State University, Chelyabinsk, Russia.
1974-1979:	<i>Research Engineer</i> , Department of Automation and Remote Control, the South Ural State University, Chelyabinsk, Russia.
1971-1974:	<i>Engineer</i> , the Research Institute of Electrical Drives, Chelyabinsk Branch, Chelyabinsk, Russia.

VISITING APPOINTMENTS:

2022 (October)	Visiting Professor , Department of Automatic-Robotics, Ecole Centrale de Nantes, France.
2021 (Sept-Oct)	Visiting Professor , Department of Automatic-Robotics, Ecole Centrale de Nantes, France.
2018 (June-July)	Visiting Professor , Department of Automatic-Robotics, Ecole Centrale de Nantes, France.
2017 (May-June)	Visiting Professor , ENSEA, Cergy-Pontoise, and Department of Automatic-Robotics, Ecole Centrale de Nantes, both France.
2016 (May)	Visiting Professor , Department of Applied Mathematics, Polytechnic University of Catalonia, Spain.
2016(June-July)	Visiting Professor , Department of Automatic-Robotics, Ecole Centrale de Nantes, France.
2015 (Sept-Nov)	Visiting Professor , Department of Electrical and Electronic Engineering, University of Cagliari, Italy.
2015 (August-Sept)	Visiting Professor , South East University of China, School of Automation, China.
2015 (May-June)	Visiting Professor , Department of Automatic-Robotics, Ecole Centrale de Nantes, France.
2014 (June-July)	Visiting Professor , Department of Automatic-Robotics, Ecole Centrale de Nantes, France.
2013 (May-June)	Visiting Professor , Centre for Systems, Dynamics and Control, School of Engineering, Mathematics and Physical Sciences, University of Exeter, UK
2012 (May-June)	Visiting Professor , Department of Automatic-Robotics, Ecole Centrale de Nantes, France.
2011 (June)	Visiting Professor , Department of Engineering, University of Leicester, Leicester, UK.
2010 (May-June)	Visiting Professor , Department of Automatic-Robotics, Ecole Centrale de Nantes, France
2008 (November)	Visiting Professor , Department of Automatic Control, CINVESTAV-IPN, Mexico City, Mexico.
2008 (Aug-Sept)	Visiting Research Fellow , Department of Information Technology, Naval Postgraduate School, Monterey, CA.
2008 (May-June)	Distinguished Visiting Fellow of the UK Royal Academy of Engineering , the University of Leicester, Leicester, UK.
2003 (May-August)	Visiting Lady Davis Fellow , Department of Mechanical Engineering, Technion (Israel Institute of Technology), Haifa, Israel.
2002 (April-June)	Visiting Professor , Department of Automatic Control, CINVESTAV-IPN, Mexico City, Mexico.
2001 (Sept-Dec)	Visiting Professor , Department of Applied Mathematics, the University of Sheffield, Sheffield, UK.
1999 - 2000	Research Fellow , NASA/Marshall Space Flight Center, AL Intergovernmental Personnel Act (IPA) Mobility Program
1999 (May-July)	Research Fellow , NASA/Marshall Space Flight Center, AL NASA/ASEE Summer Faculty Fellowship Program.

1997 (May-June) *Research Fellow*, Wright Laboratory, Wright-Patterson AFB, OH
AFOSR Summer Faculty Fellowship Program.

1997 (June-August) *Research Fellow*, NASA/Marshall Space Flight Center, AL
NASA/ASEE Summer Faculty Fellowship Program.

1994 (June-August) *Research Fellow*, Phillips Laboratory, Kirtland AFB, NM
AFOSR Summer Faculty Fellowship Program.

RESEARCH AND ENGINEERING EXPERIENCE:

CONTRIBUTION TO CONTROL SYSTEMS

Sliding Mode Control Theory. A robust solution of the MIMO nonlinear output tracking problem was obtained in sliding modes using the method of system center. A method of system center is developed to transform a nonlinear output tracking to a corresponding state-variable tracking problem. Breakthrough is achieved in nonminimum phase output tracking on traditional and higher order sliding modes in causal systems that is addressed using dynamic extension of the system center and a sliding manifold as a dynamic operator. New results on higher order sliding mode (HOSM) observers for nonminimum phase nonlinear systems have been obtained. Novel adaptive conventional and higher order sliding mode control algorithms that allow not overestimating the sliding mode control gains in systems with bounded disturbances and unknown bounds are developed. The concepts of practical relative degree, performance phase and gain margins are introduced for sliding mode control systems using frequency domain techniques. The novel hybrid impulsive-HOSM control and hybrid impulsive-HOSM control in reduced information environment was proposed.

Multiple Criteria Optimization Theory. A multiple criteria optimization problem is addressed via proposed principle of proportional damages (PPD). A norm of a difference between ideal and optimal values of the vector-performance criteria is minimized while the distribution of the losses (damages) of the performance criteria is under control. The PPD is applied to a multiple criteria LQR problem solution. A multiple criteria LQR problem solution is achieved in a linear form of state variables and is invariant to the norm, which is minimized.

Improved Inertial Measurement Unit Technology Based On Higher Order Sliding Mode Observers. The Inertial Measurement Units (IMUs) accuracy is improved by reconstructing the true acceleration and the true attitude rate input signals by employing the second order sliding mode observer (2-SMO) operating in concert with dynamic inversion, given in real time dynamically distorted measurement and the IMU dynamics. The body bending rate is estimated using reconstructed acceleration. Implementation of the proposed algorithms does not require any modification of the hardware of existing IMUs.

Stability Margins in Nonlinear Systems. A new insight into defining stability margins in a class of nonlinear time invariant (NLTI) systems, including Lur'e systems, and systems driven by sliding mode control (SMC), and their identification algorithms, is proposed. The Stability Margins are defined and their identification algorithms based on DF/HB, CC, LMI, Lyapunov, Disk and Vector margin techniques are developed. The practical stability margins in SMC systems are studied and

defined in terms of maximal acceptable (tolerant) limit cycle parameters that may occur in SMC systems affected by unmodeled (parasitic) dynamics.

Missile Interceptor Integrated Guidance and Control on Conventional and Higher Order Sliding Modes. Sliding mode control-based high accuracy robust integrated autopilot/guidance system is designed for an advanced hit-to-kill missile interceptor in a hostile (measurement noise and disturbance) environment. Higher-order sliding mode observers and differentiators with reduced sensitivity to measurement noise are employed for improving overall robustness of a flight control system. The designed integrated autopilot/guidance systems in traditional and second order sliding modes have been tested on a hit-to-kill accuracy interceptor with piezo-ceramic tendon control actuators, and on a dual thruster control interceptor via computer simulations. The study of robust hypersonic missile control is accomplished via HOSM control and observation techniques.

Hypersonic Missile Control on Adaptive Continuous Higher Order Sliding Modes. Hypersonic missile control in the terminal phase for maximum target penetration is addressed using continuous higher order sliding mode (AHOSM) control with adaptation. The AHOSM self-tuning controller is proposed and studied. The double-layer adaptive algorithm is based on equivalent control concepts and ensures non-overestimation of the control gain to help mitigating control chattering. Finite- and fixed- settling time differentiators that utilize HOSM observation algorithms facilitate the flight AHOSM controller. The proposed continuous AHOSM control is validated via simulations of a hypersonic missile in the terminal phase. The robustness and high accuracy output tracking in the presence of matched and unmatched external disturbances and missile model uncertainties is demonstrated.

Launch Vehicle Control on Classical and Higher Order Sliding Modes. Breakthrough is achieved in crew launch vehicle (CLV) and reusable launch vehicle (RLV) control in ascending, descending and terminal area energy management regions of flight using multiple-loop multiple time-scale time-varying sliding mode controller with reconfiguration and gain-direct adaptation. High accuracy robust trajectory tracking is achieved for the X-33 technology demonstration RLV and is assessed via 6DOF high fidelity simulation. The designed robust controllers permit RLV and CLV to operate in an aircraft-like regime without extensive preflight modeling and computations. Higher order sliding mode control autopilot is designed and studied for SLS-X launch vehicle (FALCON). Bending mode controller is designed using sliding mode disturbance observers for the Ares-1 launch vehicle. All designs are verified via computer simulations.

Flight Control of Damaged Aircraft on Multiple Time-Scaled Re-configurable Sliding Modes. The breakthrough is achieved in controlling damaged aircraft without traditional damage estimation and adaptation in a feedback loop. Aircraft damage recovery is achieved via robust de-coupling two/three loop multiple time-scale sliding mode controller with control reconfiguration. Robust, high-accuracy flight tracking performance is assessed via computer simulations of F-16 jet fighter and tailless aircraft (ICE Model) with re-configurable sliding mode controllers.

Sliding Mode Control of DC-to-DC and AC-to-DC power converters (buck, boost and buck-boost). The breakthrough has been achieved in decentralized de-coupling sliding mode control of the system of multiple modular DC-to-DC power converters, connected through a common primary source of electric power supply. Also, sliding mode control based on the methods of stable system center and dynamics sliding manifold was designed for boost and buck-boost (nonminimum phase)

converters that follow arbitrary output voltage command profiles. The sliding mode control was design for boost AC-to-DC 3-phase power converters with full bridge and Vienna power blocks. The power factor was improved up to 97%. Control systems' efficiency was validated via computer simulation and rapid prototyping.

Fuel-Cell-based Electric Power System Control Using Sliding Mode Control Techniques.

Control of an autonomous electric power system that comprises Proton Exchange Membrane fuel cell (PEMFC), the DC-DC boost power converter, and the ultracapacitor is addressed using sliding mode control techniques. System's PEMFC/ultracapacitor/DC-DC boost power converter zero dynamics are analyzed and appeared to be stable. The adaptive gain super-twisting sliding mode controller controls the current in PEMFC. The decoupled SMCs are designed for robust controlling the output voltage and the fast component of the load current that is commanded to the ultracapacitor. Controlling the multiple modular configuration is under development. The efficacy and robustness of the proposed three-fold SMC and 2-SM adaptive-gain controllers are confirmed via computer simulations.

Blood Glucose Regulation via Higher Order Sliding Mode Control. The breakthrough has been achieved in using HOSM feedback control for the stabilization of the blood glucose concentration level in diabetic patients. Robustness to the external disturbances, including food intake and physical workout, as well as to the parameter variations of the model of a diabetic patient is provided. The insulin pump and sensor dynamics are taken into account. The efficiency of the studied HOSM controllers/observers has been confirmed via computer simulations using Bergman minimal model, Hovorka and Sorensen models.

Retaining connectivity for mobile wireless communication network. The problem of maintaining connectivity in a mobile communication network is addressed. The agents consist of two classes: one class of agents, which is termed primary mission agents, performs surveillance operations that may or may not be coordinated efforts. The second class of agents, which is termed relay agents, are controlled to maintain the connectivity. Two control algorithms are proposed to retain the connectivity of the network. Sliding mode observers are employed to predict the trajectories of the primary mission agents, when only their positions are known from blue force messages, and this information is used to construct state dependent graphs encapsulating the measure of connectivity. An optimal model predictive control is employed to develop the control policies for the relay agents to maximize connectivity. The hybrid system approach is used to retain the connectivity of the communication network. The efficacy of the proposed control algorithms is confirmed on a case study of Riverine detection and interdiction operation.

Tight Air Vehicle Formation Control Using Higher Order Sliding Modes. Novel robust, higher order, sliding mode control and observation techniques are used to design continuous/smooth control laws suitable for a formation-hold autopilot in the presence of unknown disturbances and vehicle uncertainties. Simulation of three unmanned quadrotor rotorcrafts in a triangular tight formation following a sinusoidal path is implemented. The formation-keeping controller stabilizes the given relative distance, nullifying the position error in finite of time. The simulations show outstanding robustness and accuracy of formation tracking.

Sliding Mode Control System for Space Nuclear Reactor TOPAZ II. Robust sliding mode controllers were designed for the space nuclear reactor TOPAZ II. High accuracy, robust tracking of

the thermal power profile and the load electric power profile was achieved in a start up and operating regimes. Control system's efficiency was confirmed via computer simulation.

Sliding Mode Control of Inertial Platforms. The sliding mode controllers were designed for a three-axis inertial platform stabilization system with dynamically tuned gyroscope sensors. High accuracy robust de-coupled stabilization of axes of the inertial platform was achieved in decentralized sliding modes. Noise filtration was tailored to control system computer simulation and implementation.

RECENT SPONSORED RESEARCH (Principal Investigator):

- Contract "Resource Prospector Lunar Lander Off-Pulsing Control: Adaptive Sliding Mode Control Approach," NASA/MSFC, 08/15/18 – 08/14/19, award \$ 49,588.
- *Grant* (Co-PI), "Sliding mode adaptive distributed control," United States - Israel Bi-national Science Foundation (BSF), 10/01/11 – 9/30/15, award \$94,000.
- Contract "Higher Order Sliding Mode Guidance and Control of Hypersonic Missiles," Eglin Air Force Base, 08/27/12 – 05/27/13, award \$28,960.
- *Contract* "Sliding Mode Controller for Ultra-high Efficiency Power Factor Correction (PFC)," Fairchild Controls Corporation, 06/18/2008 - 08/11/2011, award \$170,000.
- *Grant* (Co-PI), "Adaptive Coordinated Control with VSS/SMC," United States - Israel Bi-national Science Foundation (BSF), 10/01/07 – 9/30/10, award \$79,500.
- *Contract* "Launch vehicle bending modes control," NASA/TBE, 2/9/2009 - 9/30/2009, award \$46,107.
- *Contract* "Control System Modeling and Simulation Support," NASA/TBE, 06/19/07 – 9/28/07, award \$53,471.
- *Contract* "Sliding Mode Controller for Ultra-high Efficiency Power Factor Correction (PFC)," Fairchild Controls Corporation, 11/27/2006 - 12/31/2007, award \$100,000.
- *Contract* "Active Compensation of Low Frequency Flexible Modes of Crewed Launch Vehicle," NASA/USRA, 04/12/06 – 10/12/06, award \$54,583.
- *Contract* "Integrated Guidance and Control Technology for RLV Risk and Cost Reduction," NASA, Marshall Flight Space Center, AL, 06/1/01-09/30/03, award: \$233,000.
- *Contract* "Sliding Mode Controller Design for Advanced Interceptors," U.S. Army Strategic Missile Defense Command, Huntsville, AL, 12/22/99-03/30/02, award: \$80,000.
- *Grant* "Improved Reconfigurable Sliding Mode Controller for Reusable Launch Vehicle of Second Generation Addressing Aerodynamic Surface Failures and Thrust Deficiencies," NASA, Marshall Flight Space Center, AL, 12/01/00-11/30/01, award: \$31,378.
- *Contract* "Smooth Sliding Mode Controller Design," U.S. Army Aviation and Missile Command, Huntsville, AL, 5/10/01 – 9/30/01, award: \$22,481.
- *Contract* "Reusable Launch Vehicle Control in Sliding Modes," NASA, Marshall Flight Space Center, AL, 08/15/99-08/14/00, award: \$87,754.
- *Contract* "Sliding Mode Control Design," U.S. Army Strategic Missile Defense Command, Huntsville, AL, 05/07/99-03/31/00, award: \$20,000.
- *GSRP Grant* "Sliding Mode Control of Reusable Launch Vehicle Re-entry," NASA, Marshall Flight Space Center, AL, 08/24/97-08/23/98, award: \$22,000.

- *Grant* "Continuous Sliding Mode Control Approach for Addressing Actuator Deflection and Deflection Rate Saturation in Tailless Aircraft Control and Re-configurable Flight Control," Air Force Office of Scientific Research, 01/01/98-12/31/98, award: \$25,000.
- *Contract* "Investigation of Control System Technologies for Performance Improvement," U.S. Army Aviation and Missile Command, Huntsville, AL, 06/08/98-09/30/98, award: \$19,961.
- *Contract* "Advanced Precision Aerial Delivery System," U.S. Army Missile Command, Huntsville, AL, 03/11/97 - 09/30/97, award \$16,978.

SERVICE TO DISCIPLINE

PROFESSIONAL ACTIVITIES:

- Associate Fellow of American Institute of Aeronautics and Astronautics (AIAA)
- Senior Member of Institute of Electrical and Electronics Engineers (IEEE)
- Guest editor (altogether with F. Plestan and L. Fridman) of Special Issue on "Adaptive Sliding Mode Control and Observation," *International Journal of Control*, Vol. 89, Issue 9, 2016
- Guest editor (altogether with C. Tournes and L. Fridman) of Special Issue on "Advances in Guidance and Control of Aerospace Vehicles using Sliding Mode Control and Observation Techniques" of *The Journal of the Franklin Institute*, Vol. 349, Issue 2, March 2012.
- Guest editor (altogether with M. Basin) of Special Issue on "Advances in Nonlinear Observation and Identification for Dynamic Systems" of *The Journal of the Franklin Institute*, Vol. 347, Issue 6, August 2010.
- Guest editor (altogether with L. Fridman and A. Zinober) of Special Issue on "Advances in Higher Order Sliding Mode Control" of *International Journal of Robust and Nonlinear Control*, Vol. 18, Issue 4-5, 2008.
- Guest editor (altogether with S. Spurgeon and L. Fridman) of Special Issue on "Advances in Sliding Mode Observation and Estimation" of *International Journal of Systems Science*, Vol. 38, Issues 11 and 12, 2007.
- Subject Editor, *The Journal of the Franklin Institute*
- Technical Editor, *IEEE Transactions on Mechatronics* (2016-2022)
- Associate Editor, *IEEE Transactions on Aerospace and Electronic Systems*
- Member of the *IEEE Variable Structure Systems Technical Committee*.
- Member of the *Conference Editorial Board*, the IEEE Control Systems Society
- Member of the Program Committee, the American Control Conference, 2002; the Variable Structure System Workshop, 2014, 2016, 2018.
- Chairman of the IEEE Control Systems Society, Huntsville Section (1997 – 1999)
- Chair/co-chair of sessions at the
Conferences on Decision and Control (Orlando, FL, 2011, Atlanta, GA, 2010; Seville, Spain, 2005; Las Vegas, NE, 2002; Phoenix, AZ, 1999, and Tampa, FL, 1998).
American Control Conference (Atlanta, GA, 2022, Philadelphia, PA, 2019; Boston, MA, 2016; Washington, DC, 2013; Montreal, Canada, 2012; Baltimore, MD, 2010; Saint Louis, MO, 2009; New York, NY, 2007; Portland, OR, 2005; Washington, DC, 2001; Philadelphia, PA, 1998).
AIAA Guidance, Navigation and Control Conference (Portland, OR, 2011; Toronto, Canada, 2010; Hilton Head, SC, 2007; Montreal, Canada, 2001).

- Organizer/co-organizer and Chair/co-chair of invited sessions
 “Sliding Mode Control with Adaptation,” at IFAC World Congress, Milan, Italy, 2011.
 “Advances in Higher Order Sliding Mode Observation and Estimation”, “Advances in High Order Sliding Mode Control”, and “Applications of Higher Order Sliding Mode Control” at IFAC World Congress, Seoul, Korea, 2008.
 “Advances in High Order Sliding Mode Control,” at IFAC World Congress, Prague, Czech Republic, 2005.
 “Advances in High Order Sliding Modes,” at the *Conferences on Decision and Control*, Hawaii, 2003.
- Co-organizer and co-chair of a mini-symposium “Sliding Mode Control of Large Scale Systems” at the 3^d SIAM Conference on Control and Its Applications, St. Louis, MO, 1995.
- Reviewer of a variety of professional journals, including *IFAC Automatica*, the *IEEE Transactions on Automatic Control*; *Control Systems Technology*; *Industrial Electronics*, the *AIAA Journal on Guidance, Control, and Dynamics*, and the *Journal of the Franklin Institute*.

SELECTED INVITED PRESENTATIONS:

1. Variable Structure Systems Workshop, “Sliding mode control and observation in aerospace systems,” Graz, Austria, July 2018.
2. ENSEA, Cergy, France, “Causal Nonminimum Phase Output Tracking in in Sliding Modes,” June 2017.
3. Polytechnic University of Catalonia, Spain, “Nonminimum Phase Output Tracking in in Sliding Modes,” May 2016.
4. University of Cagliari, Italy, “Flexible modes control via fault estimation: ARES I application,” October 2015.
5. Technion, Israel, “Output Tracking in Nonminimum Phase Systems in Sliding Modes,” July 2015.
6. South East University of China, China:
 - “Adaptive Sliding Mode Control,” September 2015.
 - “Nonminimum Phase output tracking on Sliding Modes,” September 2015.
7. UNAM, Mexico City, Mexico, “Hybrid-Impulsive second order sliding mode control,” August 2014.
8. Technion, Israel, “Air-Breathing Hypersonic Missile Continuous Higher Order Sliding Mode Control for Maximum Target Penetration,” June 2014.
9. Technion, Israel, “Presentation of the book “Sliding Mode Control and Observation”, May 2013.
10. Technion, Israel, “Adaptive Sliding Mode Control”, May 2012.
11. UNAM, Mexico City, Mexico, “PEM Fuel Cell/DC-DC Boost Powers Converter System Control via Sliding Modes,” May 2011.
12. Ecole Centrale de Nantes, France, June 2010
 - “Reconfiguration of a Mobile Communication Network via Higher Order Sliding Mode Control”
 - “Second Order Sliding Modes and Finite Reaching Time Adaptive Nonlinear Control”
 - “Sliding Mode Observers with Application to Flexible Mode Control for Ares I”
13. ICEECSAS-2008, Mexico City, Mexico, “Sliding Mode Control: Theory and Applications: Tutorial,” November 2008.

14. UNAM, Mexico City, Mexico, "Active Compensation of Low Frequency Flexible Modes of Crew Launch Vehicle Using Sliding Mode Observers," November 2008.
15. Workshop at CDC, Cancun, Mexico, "Homogeneous Higher-Order Sliding Mode Control: Aerospace control systems" December 2008.
16. Naval Postgraduate School, Monterey, CA, "Aerospace Vehicle Control Using Higher Order Sliding Modes," August 2008.
17. Department of Mechanical Engineering Seminar, University of Bristol, UK, "Closed-Coupled Formation Flight Control Using Higher Order Sliding Modes," June 2008.
18. "Higher Order Sliding Mode Control with Application to Blood Glucose Level Regulation" at
 - Department of Civil Engineering Seminar, Technion, Haifa, Israel, March 2008.
 - IMA Systems and Control Theory Group Seminar, London City University, UK, May 2008.
 - Department of Applied Mathematics Seminar, University of Sheffield, UK, June 2008.
19. Naval Postgraduate School, Monterey, CA, "UAV formation, Reusable Launch Vehicle and Missile Control via Traditional and High Order Sliding Modes," August 2005.
20. "Sliding Mode Control: Overview and Applications to Aerospace Control,"
 - Department of Mechanical Engineering Seminar, Technion – Israel Institute of Technology, Haifa, Israel, June 2003.
 - Department of Automatic Control Seminar, Centro de Investigacion y de Estudios Avanzados del I.P.N (CINVESTAV-IPN), Mexico City, Mexico, May 2002.
 - Department of Engineering Seminar, Cambridge University, UK, November 2001.
 - Department of Electrical Engineering Seminar, University of Liverpool, UK, November 2001.
 - Department of Applied Mathematics Seminar, University of Sheffield, UK, October 2001.
21. Leicester University, UK, "Advances in Sliding Mode Control," November 2001.
22. Invited Session, *Conference on Decision and Control*, Orlando, FL, "Analog-to-Digital Converters: Sliding Mode Observer as a Pulse Modulator," December 2001.
23. "Integrated Guidance and Control System Design For Hit-to-Kill Interceptors: Sliding Mode Approach,"
 - RAFAEL (state-run missile company), Haifa, Israel, July 2003.
 - Naval Postgraduate School, Monterey, CA, May 2008.
24. XXII Congresso Internacional de Ingenieria Electronica, Chihuahua, Mexico "Nonminimum Phase Tracking on Sliding Modes," October 2000.
25. IEEE CSS Meeting, Huntsville, AL, "Sliding Mode Control: Theory and Applications (Tutorial)," March 2000.
26. Boeing (DoD Program), Huntsville, AL, "Sliding Mode Control: Application to Controller Design for Kinetic Energy Kill Vehicle," February 1999.
27. US Army Missile Command (Guidance and Control Systems Division), Huntsville, AL, "Sliding Mode Control Technique: Theory and Application to Missile Control" January 1995.
28. NASA/MSFC (Guidance and Control Systems Division), Huntsville, AL, "Launch Vehicle Control on Sliding Modes," February 1994.
29. US Army Missile Command (Propulsion Division) Huntsville, AL, "Sliding Mode Control Technique: Theory and Application to Propulsion Control," February 1994.

30. IEEE CSS Meeting, Huntsville, “Sliding Mode Stabilization of Three-Axis Inertial Platform,” November 1993.

AWARDS:

- A recipient of AIAA Small Satellite Best Paper Award from the AIAA Scitech 2021 Forum for the paper “Adaptive Double-Layer Continuous Super-Twisting Control of a Satellite Formation” (AIAA-2021-0560) by Mason Nixon and Yuri Shtessel.
- A recipient of the Harold Chestnut Control Engineering Textbook Prize for a textbook *Sliding Mode Control and Observation*, Springer 2014 by Y. Shtessel, C. Edwards, L. Fridman, and A. Levant, 2020.
- A recipient of the UAH College of Engineering Outstanding Senior Professor Award, 2013.
- A recipient of Distinguished Visiting Fellowship of the Royal Academy of Engineering, UK, 2008.
- A recipient of the UAH Research and Creative Achievement Award, 2004.
- A recipient of the IEEE Third Millennium Medal for the outstanding contribution to control systems engineering, 2000.
- A recipient of the IEEE Certificate of Recognition for the valued service and contribution made as a chair of Control System Society, Huntsville Section, 1997-1999.
- A recipient of the IEEE Huntsville Section Outstanding Educator Award, 1999.
- A recipient of the IEEE Huntsville Section Outstanding Service Award, 1998.
- A recipient of the Certificate of Recognition for research contribution made through the NASA/ASEE Summer Faculty Fellowship Program, 1997.
- A recipient of the outstanding session presentation awards at 2003 Guidance, Navigation and Control Conference, and at 1997, 1995 American Control Conferences.

RECENT CONSULTING SERVICE

- Boeing, Huntsville, AL, “Sensor Improvement,” 04/30/2022-present
- Aero Thermo Technology, Inc., Huntsville, AL, “Fast IMU Autonomous Alignment, Gyroscopic and Accelerometer Measurement Improvement by Input Reconstruction,” 01/01/2017-03/01/2021.
- Davidson Technologies, Inc., Huntsville, AL, “Missile and Satellite Guidance and Control,” 06/01/2005-06/01/2014.
- IST-Rolla, Rolla, MO, “Integrated Missile Interceptor Guidance and Control,” 05/15/2006-10/30/2006.
- Radiance Technologies, Inc., Huntsville, AL, “Missile Interceptor Guidance and Control,” 02/01/2003-09/30/2005.
- KT Engineering, Huntsville, AL, “Ballistic Missile Control,” 01/01/2004-05/31/2004.

LIST OF PUBLICATIONS

Publish or Perish: Citations: 16373, h_{index} : 53, g_{index} : 119, h_I -norm: 35, h_I -annual: 1.06
Google scholar: Citations: 16189, h_{index} : 53, i_{10} -index: 190
Scopus: Citations: 12330, h_{index} : 46

I. Books

1. Y. Shtessel, C. Edwards, L. Fridman, and A. Levant, *Sliding Mode Control and Observation*, Birkhauser, Springer, New York, 371 pages, 2014.

II. Peer-reviewed journal articles

Siddharth Das, Yuri Shtessel, and Franck Plestan, “Stability Margins Analysis for a Class of Nonlinear Systems: Disk and Vector Margins Approach,” *International Journal of Control*, 2023 – under preparation.

2. R. Jesionowski, Y. Shtessel, and F. Plestan, "Sliding Mode Control Design Using Generalized Relative Degree Approach: Aerospace Application," *The Journal of the Franklin Institute*, Volume 360, Issue 14, 2023, pp. 10605-10632, <https://doi.org/10.1016/j.jfranklin.2023.08.002>.
3. S. Rouquet, M. Ghanes, J. -P. Barbot, Y. B. Shtessel and L. Merienne, "A Batteryless Series Hybrid Electric Vehicle Control," in *IEEE Transactions on Control Systems Technology*, vol. 31, no. 3, pp. 1032-1041, May 2023, doi: 10.1109/TCST.2022.3215256.
4. S. Nateghi, Y. Shtessel, C. Edwards, and J-P. Barbot, “Resilient Control of Cyber-Physical Systems Using Adaptive Super-Twisting Observer,” *Asian Journal of Control*, Vol. 23, Issue 3, May 2023, pp 1775–1790, <http://doi.org/10.1002/asjc.2922>.
5. L. Chen, C. Edwards, H. Alwi, M. Sato, S. Nateghi, and Y. Shtessel “Sliding Mode Observers for Robust Fault Estimation in LPV Systems,” *International Journal on Robust and Nonlinear Control*, Vol. 33, Issue 15, pp. 9084-9108, October 2023, <https://doi.org/10.1002/rnc.6307>.
6. S. Kode, Y. Shtessel, A. Levant, J. Rakoczy, M. Hannan, and J. Orr, “Development of Relative Degree Based Aerospace Sliding Mode Control MATLAB Toolbox with Cases Study”, *IEEE Aerospace and Electronic Systems Magazine*, 2023, doi: 10.1109/MAES.2022.3177576 – published on-line.
7. Mohamad Alaa Eddin Alali, Yuri B Shtessel, and Jean-Pierre Barbot, ”Sensor Effects in LCL-Type Grid-Connected Shunt Active Filters Control using Higher Order Sliding Mode Control Techniques,” *Sensors*, 22 (19): 7516. October 2022, DOI: 10.3390/s22197516.
8. M. Nixon and Y. Shtessel, "Adaptive Sliding Mode Control of a Perturbed Satellite Formation Antenna Array," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 58, No. 5, October 2022, pp. 4595-4614, 2022, doi: 10.1109/TAES.2022.3164410.
9. S. Das, Y. Shtessel, C. Zhang, and F. Plestan, “Definition and Analysis of Stability Margins for a Class of Nonlinear Systems,” *International Journal on Robust and Nonlinear Control*, Vol. 32, Issue 2, January 2022, pp. 1055-1074, <https://doi.org/10.1002/rnc.5862>.
10. M. Alfayizi, Y. Shtessel, and C. Edwards. “Quad-Rotor Adaptive Sliding Mode Control Using Only Position and Yaw Sensors: Generalized Relative Degree Approach,” *the Journal of the Franklin Institute*, Vol. 359, Issue 1, January 2022, pp. 492-519 <https://doi.org/10.1016/j.jfranklin.2021.11.004>.
11. G. Rinaldi, P. P. Menon, C. Edwards, A. Ferrara, and Y Shtessel, “Adaptive Dual-Layer Super-Twisting Sliding Mode Observers to Reconstruct and Mitigate Faults and Attacks in Power Networks,” *Automatica*, Volume 129, July 2021.
12. S. Nateghi, Y. Shtessel, and C. Edwards “Resilient Control of Cyber-Physical Systems under Sensor and Actuator Attacks Driven by Adaptive Sliding Mode Observer,” *International Journal on Robust and Nonlinear Control*, Volume 31, Issue 15, October 2021, Pages 7425-7444 <http://doi.org/10.1002/rnc.5694>.

13. S. S Kode, Y. B. Shtessel, A. Levant, J. Rakoczy, M. Hannan, and J. Orr "Aerospace Sliding Mode Control Toolbox: Relative Degree Approach with Resource Prospector Lander and Launch Vehicle Case Studies," *E-print arXiv*, [arXiv:2105.03767v2](https://arxiv.org/abs/2105.03767v2) [eess.SY] 8 Jun 2021.
14. M. A. Alali, Z. Sabiri, Y. Shtessel, and J-P. Barbot, "Study of a Common Control Strategy for Grid-Connected Shunt Active Photovoltaic Filter without DC/DC converter," *Sustainable Energy Technologies and Assessments*, Volume 45, 2021, 101149, ISSN 2213-1388, <https://doi.org/10.1016/j.seta.2021.101149>.
15. M. Ramesh, L. Cui, Y. Shtessel, and R. Gorur, "Failure Prediction of Polymeric Insulating Materials using Sliding Mode Observer," *International Journal of Electrical Power and Energy Systems*, Vol. 126, 2021.
16. R. J. Rajesh, Y. Shtessel, and C. Edwards, "Accuracy Improvement of Dynamic Sensors Using Sliding Mode Observers with Dynamic Extension," *Sensors and Actuators A: Physical*, Vol. 316, December 2020, DOI: [10.1016/j.sna.2020.112396](https://doi.org/10.1016/j.sna.2020.112396)
17. Y. Shtessel, M. Ghanes, and R. Ashok, "Hydrogen Fuel Cell and Ultracapacitor Based Electric Power System Sliding Mode Control: Electric Vehicle Application," *Energies*, MDPI, vol. 13(11), pp. 1-20, June 2020.
18. M. Alfayizi and Y. Shtessel, "Perturbed Quad-Rotor Trajectory Control Using Only Position and Yaw Sensors," *International Journal of Innovative Studies in Sciences and Engineering Technology (IJISSET)*, Vol. 6, Issue 5, 2020, pp. 10-16.
19. A. Volkov and Y. Shtessel, "Underground electrotonic signal transmission between plants," *Communicative & Integrative Biology*, Vol. 13, No. 1, 2020, pp. 54-58.
20. C. B. Panathula and Y. Shtessel, "Practical Stability Margins in Systems with Continuous Higher Order Sliding Mode Control," *the Journal of the Franklin Institute*, Vol. 357, Issue 1, pp. 106-120, January 2020, DOI: <https://doi.org/10.1016/j.jfranklin.2019.09.034>.
21. S. Nateghi, Y. Shtessel, and C. Edwards, "Cyber-Attacks and Faults Reconstruction using Finite Time Convergent Observation Algorithms: Electric Power Network Application," *the Journal of the Franklin Institute*, Vol 357, Issue 1, January 2020, Pages 179-205, published on-line <https://doi.org/10.1016/j.jfranklin.2019.10.002>.
22. M. V. Basin, F. Guerra-Avellaneda and Y. B. Shtessel, "Stock Management Problem: Adaptive Fixed-Time Convergent Continuous Controller Design," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 50, no. 12, pp. 4974-4983, Dec. 2020, doi: 10.1109/TSMC.2019.2930563.
23. M. A. E. Alali, Y. Shtessel, and J-P. Barbot, "Grid-Connected Shunt Active LCL Control via Continuous Sliding Modes," *IEEE Transaction on Mechatronics*, Vol. 24, No. 2, April 2019, pp. 729-739, 2019, ISSN: 1083-4435. DOI: 10.1109/TMECH.2019.2896140.
24. C. Edwards and Y. Shtessel "Enhanced Continuous Higher Order Sliding Mode Control with Adaptation", *the Journal of the Franklin Institute*, Vol. 356, Issue 9, June 2019, Pages 4773-4784.
25. C. Tournes, Y. Shtessel, and A. Spenser, "Hypersonic Glider Autopilot using Adaptive Higher Order Sliding Mode Control with Impulsive Actions," *American Journal of Aerospace Engineering*, Vol. 5, Issue 2, 2018, pp. 71-86, DOI: 10.11648/j.ajae.20180502.12.
26. A. G. Volkov and Y. B. Shtessel, "Electrical signal propagation within and between tomato plants," *Bioelectrochemistry*, Vol. 124, 2018, pp. 195-205.
27. C. B. Panathula, A. Rosales, Y. Shtessel, and L. Fridman, "Closing Gaps for Aircraft Attitude Higher Order Sliding Mode Control Certification via Practical Stability Margins Identification,"

- IEEE Transactions on Control Systems Technology*, Vol. 26, No. 6, 2018, pp. 2020-2034, DOI: 10.1109/TCST.2017.2753162.
28. J. E. Bluman, C-K Kang, and Y. Shtessel "Control of a Flapping-Wing Micro Air Vehicle: a Sliding Mode Approach," *Journal of Guidance, Control and Dynamics*, Vol. 41, No. 5, 2018, pp. 1223-1226.
 29. M. Basin, P. Rodriguez-Ramirez, S. X. Ding, T. Daszenies, and Y. Shtessel, "Continuous Fixed-Time Convergent Regulator for Dynamic Systems with Unbounded Disturbances," *the Journal of the Franklin Institute*, Vol 355, Issue 5, 2018, pp. 2762-2778, DOI: 10.1016/j.jfranklin.2018.01.010.
 30. F. Aldukali, Y. Shtessel, and F. Plestan, "Impulsive-Second Order Sliding Mode Control in Reduced Information Environment," *International Journal on Robust and Nonlinear Control*," Vol. 28, Issue 8, pp. 2909-2926, 25 May, 2018, <https://doi.org/10.1002/rnc.4057>.
 31. P. Yu, M. Basin, and Y. Shtessel, "Hypersonic Missile Adaptive Sliding Mode Control Using Finite- and Fixed-Time Observers," *IEEE Transactions on Industrial Electronics*, Vol. 65, Issue 1, 2018, pp. 930-941; DOI: 10.1109/TIE.2017.2701776.
 32. A. G. Volkov and Y. B. Shtessel, "Electrotonic signal transduction between Aloe vera plants using underground pathways in soil: Experimental and analytical study," *AIMS Biophysics*, Volume 4, Issue 4, October 2017, pp. 576-595.
 33. J. A. Rosales Martínez, Y. B. Shtessel, L. M. Fridman, and C. B. Panathula, "Chattering Analysis of HOSM Systems: Frequency Domain Approach," *IEEE Transactions on Automatic Control*, Vol. 62, No. 8, 2017, pp. 4109-4115; DOI: 10.1109/TAC.2016.2619559.
 34. Y. Shtessel, A. Glumineau, F. Plestan, and F. Aldukali, "Hybrid-impulsive second-order sliding mode control: Lyapunov approach," *International Journal on Robust and Nonlinear Control*,"- Volume 27, Issue 7, May 2017, pp. 1064–1093, DOI: 10.1002/rnc.3618.
 35. A. Rosales, Y. Shtessel, and L. Fridman, "Analysis and Design of Systems Driven by Finite-time Convergent Controllers: Practical Stability Approach," *International Journal of Control*, 2017-on-line: <http://dx.doi.org/10.1080/00207179.2016.1255354>.
 36. M. Basin, P. Yu, and Y. Shtessel, "Finite- and Fixed-Time Differentiators Utilizing Higher-Order Sliding Mode Techniques," *IET Control Theory & Applications*, Volume 11, Issue 8, May 2017, p. 1144 –1152, on-line: DOI: <http://dx.doi.org/10.1049/iet-cta.2016.1256>.
 37. M. Basin, C. B. Panathula, and Y. Shtessel, "Multivariable continuous fixed-time second-order sliding mode control: design and convergence time estimation" *IET Control Theory & Applications*, Volume 11, Issue 8, May 2017, pp. 1104 –1111, - on-line: DOI: 10.1049/iet-cta.2016.0572.
 38. C. B. Panathula, A. Rosales, Yuri Shtessel, and M. Basin, "Chattering Analysis of Uniform Fixed-Time Convergent Sliding Mode Control," *Journal of the Franklin Institute*, Vol. 354, Issue 4, March 2017, pp. 1907-1921 <http://dx.doi.org/10.1016/j.jfranklin.2016.12.010>.
 39. Y. B. Shtessel, J. A. Moreno Pérez, L. M. Fridman, "Twisting Sliding Mode Control with Adaptation: Lyapunov Design, Methodology and Application," *Automatica*, Vol. 75, January 2017, pp. 229-235, DOI: 10.1016/j.automatica.2016.09.004.
 40. S. V. Pavan Kumar Maddukuri and Y. B. Shtessel, "Robust Sliding Mode Control Design for a Quadratic Boost Converter," *International Journal of Electronics and Electrical Engineering*, Vol. 4, No. 5, October 2016, pp. 386-391.
 41. M. Basin, Y. Shtessel, and F. Aldukali "Continuous Finite- and Fixed-Time High-Order Regulators", *Journal of the Franklin Institute*, Vol. 353, Issue 18, December 2016, pp. 5001-5012.

42. A. G. Volkov, E. K. Nyasani, C. Tuckett, J. M. Scott, M. M. Z. Jackson, E. A. Greeman, A. S. Greenidge, D. O. Cohen, M. I. Volkova, and Y. B. Shtessel, "Electrotonic potentials in Aloe Vera L.: Effects of intercellular and external electrodes arrangement," *Bioelectrochemistry*, Vol. 113, 2016, pp. 60-68.
43. A. G. Volkov and Y. B. Shtessel, "Propagation of electrotonic potentials in plants: Experimental study and mathematical modeling" *AIMS Biophysics*, 2016, 3(3), pp. 358-379, DOI: 10.3934/biophy.216.3.358.
44. M. Basin, C. Panathula, and Y. Shtessel, "Adaptive Uniform Fixed-Time Convergent Second Order Sliding Mode Control," *International Journal of Control*, Vol. 89, Issue 9, 2016, pp. 1777-1787, DOI: 10.1080/00207179.2016.1184759.
45. Y. Shtessel, L. Fridman, and F. Plestan, "Guest Editorial: Adaptive Sliding Mode Control and Observation," *International Journal of Control*, Vol. 89, Issue 9, 2016, pp. 1743-1746, ID: 1194531 DOI: 10.1080/00207179.2016.1194531.
46. C. Edwards and Y. Shtessel "Adaptive Dual Layer Super-Twisting Control and Observation," *International Journal of Control*, Vol. 89, Issue 9, 2016, pp. 1759-1766, DOI: 10.1080/00207179.2016.1175030.
47. B. Mirkin, J. Haddad, and Y. Shtessel, "Tracking with asymptotic sliding mode and adaptive input delay effect compensation of nonlinear delayed systems applied to traffic feedback control," *International Journal of Control*, Vol. 89, Issue 9, 2016, pp. 1890-1902, DOI: 10.1080/00207179.2016.1174340.
48. P. P. Menon, C. Edwards, and Y. Shtessel, "An Adaptive Sliding Mode Observer for A Complex Network of Dynamical Systems," *Int. J. Adapt. Control Signal Process*, Vol. 30, Issues 8-10, August-October 2016, pp. 1465-1478, DOI: 10.1002/acs.2670.
49. M. Basin, C. Panathula, Y. Shtessel, and P. Rodriguez-Ramirez, "Continuous Finite-Time Output Regulators for Systems with Unmatched Disturbances" *IEEE Transactions on Industrial Electronics*, Vol. 63, No. 8, 2016, pp. 5036-5043, DOI 10.1109/TIE.2016.2549504.
50. P. Yu, Y. Shtessel, and C. Edwards, "Continuous Higher Order Sliding Mode Control with Adaptation of Air Breathing Hypersonic Missile," *Int. J. Adapt. Control Signal Process*, Vol. 30, Issues 8-10, August-October 2016, pp. 1099-1118, DOI: 10.1002/acs.2664.
51. C. Edwards and Y. Shtessel "Adaptive Continuous Higher Order Sliding Mode Control," *Automatica*, Vol. 65, 2016, pp 183-190.
52. R. Ashok and Y. Shtessel, "Control of Fuel Cell- based Electric Power System Using Adaptive Sliding Mode Control and Observation Techniques," *The Journal of the Franklin Institute*, Vol. 352, 2015, pp. 4911-4934.
53. P. Lanza, Y. Shtessel, and J. Stensby, "Improved Acquisition in a Phase-Locked Loop Using Sliding Mode Control Techniques," *The Journal of the Franklin Institute*, 352, 2015, pp. 4188–4204.
54. C. Panathula, F. Fahimi, and Y. Shtessel, "Slip Eliminator for Robots on Slippery 3D Terrains," *Control and Intelligent Systems*, vol. 42, no. 2, July 2014, pp. 167-175.
55. P. Lanza, J. Stensby, and Y. Shtessel, "An Exact Formula for the Maximum VCO Sweep Rate of a PLL," *The Journal of the Franklin Institute*, vol. 351, September 2014, pp. 4495-4513.
56. B. Mirkin, P.-O. Gutman, and Y. Shtessel, "Decentralized Continuous MRAC with Local Asymptotic Sliding Modes of Nonlinear Delayed Interconnected Systems," *The Journal of the Franklin Institute*, Vol. 351, No. 4, 2014, pp. 2076-2088.

57. A. Gallardo Hernandez, L. Fridman, A. Levant, Y. Shtessel, R. Leder, C. R. Monsalve, and S. I. Andrade, "High-Order Sliding-Mode Control for Blood Glucose: Practical Relative Degree Approach" *Control Engineering Practice*," Vol. 21, Issue 5, May 2013, pp. 747-758.
58. F. Plestan, Y. Shtessel, V. Bregeault, and A. Poznyak, "Sliding mode control with gain adaptation -application to an electropneumatic actuator," *Control Engineering Practice*, Vol. 21, Issue 5, May 2013, pp. 679-688.
59. Y. Shtessel, J. Kochalummoottil, C. Edwards, and S. Spurgeon, "Continuous adaptive finite reaching time control and second order sliding modes" *IMA Journal of Mathematical Control and Information*, Vol. 30, Issue 1, March 2013, pp. 97-113.
60. C. B. Panathula, F. Fahimi, Y. Shtessel, "Nonlinear Model Predictive Control versus Linear Time-Variant Control for Mobile Robots Prone to Input Saturation," *Nonlinear Engineering – Modeling and Application*, Issue 3-4, December 2012, pp. 77-91.
61. B. Mirkin, P.-O. Gutman, and Y. Shtessel, "Asymptotic Sliding Mode Control Approach to Adaptive Distributed Tracking Problem for Multi-Agent Nonlinear Delayed Systems," *International Journal of Control*, Volume 85, Issue 11, November 2012, pages 1671-1682.
62. Y. Shtessel, M. Taleb, and F. Plestan, "A novel adaptive-gain *super-twisting* sliding mode controller: methodology and application," *Automatica*, Vol. 48, Issue 5, May, 2012, pp. 759-769.
63. G. Liu, A. Zinober, Y. Shtessel, and Q. Niu, "Adaptive Twisting Sliding Mode Control for the Output Tracking in Time Delay Systems, *Australian Journal of Electrical and Electronics Engineering*, Vol. 9, No. 3, September-December, 2012, pp. 217-224.
64. B. Mirkin, P.-O. Gutman, and Y. Shtessel, "Coordinated Decentralized Sliding Mode MRAC with Control Cost Optimization for a Class of Nonlinear Systems," *The Journal of the Franklin Institute, Special Issue on Optimal Sliding Mode Control*, Vol. 349, Issue 4, May 2012, pp. 1364-1379.
65. Y. Shtessel, L. Fridman, and C. Tournes "Guest Editorial: Advances in Guidance and Control of Aerospace Vehicles using Sliding Mode Control and Observation Techniques," *The Journal of the Franklin Institute, Special Issue on Advances in Guidance and Control of Aerospace Vehicles using Sliding Mode Control and Observation Techniques*, Vol. 349, Issue 2, March 2012, pp. 391-396.
66. J. Stott and Y. Shtessel, "Launch Vehicle Attitude Control Using Sliding Mode Control and Observation Techniques," *The Journal of the Franklin Institute, Special Issue on Advances in Guidance and Control of Aerospace Vehicles using Sliding Mode Control and Observation Techniques*, Vol. 349, Issue 2, March 2012, pp. 397-412.
67. J. Orr and Y. Shtessel, "Lunar Spacecraft Powered Descent Control Using Higher-Order Sliding Mode Techniques," *The Journal of the Franklin Institute, Special Issue on Advances in Guidance and Control of Aerospace Vehicles using Sliding Mode Control and Observation Techniques*, Vol. 349, Issue 2, March 2012, pp. 476-492.
68. L. Besnard, Y. Shtessel, and B. Landrum, "Quadrotor Vehicle Control via Sliding Mode Controller Driven by Sliding Mode Disturbance Observer," *The Journal of the Franklin Institute, Special Issue on Advances in Guidance and Control of Aerospace Vehicles using Sliding Mode Control and Observation Techniques*, Vol. 349, Issue 2, March 2012, pp. 658-684.
69. B. Mirkin, P.-O. Gutman and Y. Shtessel, "Robust Adaptive Sliding Mode Tracking of State Delayed Nonlinear Plants with Actuator Failures," *International Journal of Robust and Nonlinear Control*, Vol. 21, No. 17, 2011, pp. 2009-2026.

70. J. M. Olm, X. R. Oton, and Y. Shtessel "Stable inversion-based robust tracking control in DC-DC nonminimum phase switched converters", *Automatica*, Vol. 47, No.1, pp. 221-226, 2011.
71. Y. Shtessel, S. Baev, C. Edwards, and S. Spurgeon, "Output feedback tracking in causal nonminimum-phase nonlinear systems using higher order sliding modes," *International Journal of Robust and Nonlinear Control*, Vol. 20, Issue 16, November 2010, pp. 1866-1878.
72. F. Plestan, Y. Shtessel, V. Brégeault, and A. Poznyak, "New methodologies for adaptive sliding mode control," *International Journal of Control*, Vol. 83, No. 9, 2010, pp. 1907–1919.
73. B. Mirkin, P. O. Gutman, and Y. Shtessel, "Tracking for nonlinear plants with multiple unknown time-varying state delays using sliding mode with adaptation," *International Journal of Robust and Nonlinear Control*, Vol. 20, Issue 13, September 2010, pp. 1455-1464.
74. M. Basin and Y. Shtessel, "Guest Editorial: Advances in Nonlinear Observation and Identification for Dynamic Systems," *The Journal of the Franklin Institute, Special Issue on Advances in Nonlinear Observation and Identification for Dynamic Systems*, Vol. 347, Issue 6, August 2010, pp. 895-898.
75. B. Mirkin, P. O. Gutman; and Y. Shtessel, Robust Adaptive Tracking with an Additional Plant Identifier for a Class of Nonlinear Systems, *The Journal of the Franklin Institute, Special Issue on Advances in Nonlinear Observation and Identification for Dynamic Systems*, Vol. 347, Issue 6, August 2010, pp. 974-987.
76. Y. Shtessel, S. Baev, C. Edwards, and S. Spurgeon, "HOSM observer for a class of non-minimum phase causal nonlinear MIMO systems," *IEEE Transactions on Automatic Control*, Vol. 55, No. 2, 2010, pp. 543-548.
77. Y. Shtessel, P. Kaveh, and A. Ashrafi, "Harmonic Oscillator Utilizing Double Switch Traditional and Higher Order Sliding Mode Techniques," *The Journal of the Franklin Institute*, Vol. 346, Issue 9, 2009, pp. 872-888.
78. G. Liu, A. S. I. Zinober, and Y. Shtessel, "Second order SM approach to SISO time-delay system output tracking," *IEEE Transactions on Industrial Electronics*, Vol. 56, No. 9, 2009, pp. 3638-3645.
79. Y. Shtessel, I. Shkolnikov and A. Levant, "Guidance and Control of Missile Interceptor Using Second Order Sliding Modes," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 45, No. 1, 2009, pp. 110-124.
80. Y. Shtessel and C. Tournes, "Integrated Higher Order Sliding Mode Guidance and Autopilot for Dual Control Missiles," *AIAA Journal on Guidance, Control, and Dynamics*, Vol. 32, No. 1, 2009, pp. 79-94.
81. Y. Shtessel, S. Baev, and H. Biglari, "Unity Power Factor Control in 3-phase AC/DC boost converter using Sliding Modes," *IEEE Transactions on Industrial Electronics*, Vol. 55, No. 11, 2008, pp. 3874-3882.
82. Y. Shtessel, L. Fridman, and A. Zinober, "Higher Order Sliding Modes: Editorial," *International Journal of Robust and Nonlinear Control, Special Issue on Advances in Higher Order Sliding Mode Control*, Vol. 18, Issue 4-5, March 2008, pp. 381-384.
83. S. Baev, Y. Shtessel, and I. Shkolnikov, "Nonminimum-phase output tracking in causal systems using higher order sliding modes," *International Journal of Robust and Nonlinear Control, Special Issue on Advances in Higher Order Sliding Mode Control*, Vol. 18, Issue 4-5, March 2008, pp. 454-467.
84. P. Kaveh and Y. Shtessel, "Blood Glucose Regulation Using Higher Order Sliding Mode Control," *International Journal of Robust and Nonlinear Control, Special Issue on Advances in Higher Order Sliding Mode Control*, Vol. 18, Issue 4-5, March 2008, pp. 557-569.

85. L. Fridman, Y. Shtessel, C. Edwards, and X. G. Yan, "Higher Order Sliding Mode Observer for State Estimation and Input Reconstruction in Nonlinear Systems," *International Journal of Robust and Nonlinear Control, Special Issue on Advances in Higher Order Sliding Mode Control*, Vol. 18, Issue 4-5, March 2008, pp. 399-412.
86. Y. Shtessel, S. Spurgeon, and L. Fridman, "Sliding Mode Observation and Identification. Editorial 2," *International Journal of Systems Science, Special Issue on Advances in Sliding Mode Observation and Estimation (Part Two)*, Vol. 38, Issue 11, 2007, pp. 845-846.
87. A. S. Poznyak, J. A. Escobar, and Y. B. Shtessel, "Sliding Modes Time Varying Matrix Identification for Stochastic System," *International Journal of Systems Science, Special Issue on Advances in Sliding Mode Observation and Estimation (Part Two)*, Vol. 38, Issue 11, 2007, pp. 847-859.
88. S. Baev, I. Shkolnikov, Y. Shtessel, and A. Poznyak, "Sliding Mode Parameter Identification of Dynamic Systems with Measurement Noise," *International Journal of Systems Science, Special Issue on Advances in Sliding Mode Observation and Estimation (Part Two)*, Vol. 38, Issue 11, 2007, pp. 871-878.
89. Y. Shtessel, S. Spurgeon, and L. Fridman, "Higher Order Sliding Mode Observers. Editorial 1," *International Journal of Systems Science, Special Issue on Advances in Sliding Mode Observation and Estimation (Part One)*, Vol. 38, Issue 10, 2007, pp. 771-772.
90. Y. Shtessel, I. Shkolnikov and A. Levant, "Smooth Second Order Sliding Modes: Missile Guidance Application," *Automatica*, Vol. 43, No.8, 2007, pp. 1470-1476.
91. E. Fossas, J. M. Olm, A. Zinober, and Y. Shtessel, "Galerkin-based sliding mode direct tracking control of nonminimum phase DC-to-DC power converters," *International Journal of Robust and Nonlinear Control*, Vol. 17, No. 7, 2007, pp. 587-604.
92. C. Hall and Y. Shtessel, "Sliding Mode Disturbance Observers-based Control for a Reusable Launch Vehicle," *AIAA Journal on Guidance, Control, and Dynamics*, Vol. 29, No. 6, 2006, pp. 1315-1329.
93. C. Tournes, Y. Shtessel, and I. Shkolnikov, "Autopilot for Missiles Steered by Aerodynamic Lift and Divert Thrusters Using Nonlinear Dynamic Sliding Manifolds," *AIAA Journal on Guidance, Control, and Dynamics*, Vol. 29, No. 3, 2006, pp. 617-625.
94. T. Massey and Y. Shtessel, "Continuous Traditional and High Order Sliding Modes for Satellite Formation Control" *AIAA Journal on Guidance, Control, and Dynamics*, Vol. 28, No. 4, 2005, pp.826-831.
95. I. Shkolnikov, Y. Shtessel, and D. Lianos, "The effect of sliding mode observers in the homing guidance loop," *ImechE Journal on Aerospace Engineering, Part G*, Vol. 219, No. 2, 2005, pp. 103-111.
96. A. S. Poznyak, Y. B. Shtessel and C. J. Gallegos, "Min-Max Sliding Mode Control for Multi-Model Linear Time Varying Systems," *IEEE Transactions on Automatic Control*, Vol. 48, No. 12, 2003, pp. 2141-2149
97. Y. B. Shtessel, I. A. Shkolnikov and M. D. J. Brown, "An Asymptotic Second Order Smooth Sliding Mode Control," *Asian Journal of Control*, Vol. 5, No 4, 2003, pp. 498-504.
98. Y. Shtessel, A. Zinober, I. Shkolnikov, "Sliding Mode Control of Boost and Buck-boost Power Converters Using the Dynamic Sliding Manifold," *International Journal of Robust and Nonlinear Control*, Vol. 13, No. 14, 2003, pp. 1285-1298.
99. Y. Shtessel, and I. Shkolnikov, "Aeronautical and Space Vehicle Control in Dynamic Sliding Manifolds," *International Journal of Control*, Vol. 76, Issue 9/10, 2003, pp.1000-1017.

100. Y. Shtessel, A. Zinober and I. Shkolnikov, "Sliding Mode Control for Nonlinear Systems with Output Delay via Method of Stable System Centre," *ASME Journal of Dynamic Systems, Measurement and Control*, Vol. 25, Issue 2, 2003, pp. 253-257.
101. Y. Shtessel, A. Zinober and I. Shkolnikov, "Sliding Mode Control of Boost and Buck-Boost Power Converters Using Method of Stable System Centre," *Automatica*, Vol. 39, Issue 6, June 2003, pp. 1061-1067.
102. I. A. Shkolnikov and Y. B. Shtessel, "Tracking a Class of Nonminimum Phase Systems with Nonlinear Internal Dynamics via Sliding Mode Control using Method of System Center," *Automatica*, Vol. 38, Issue 5, May 2002, pp. 837-842.
103. Y. Shtessel, J. Buffington, and S. Banda, "Tailless Aircraft Flight Control Using Multiple Time Scale Re-Configurable Sliding Modes," *IEEE Transactions on Control Systems Technology*, Vol. 10, No. 2, 2002, pp. 288-296.
104. I. A. Shkolnikov and Y. B. Shtessel, "Tracking Controller Design for Nonlinear Nonminimum Phase Systems via Method of System Center," *IEEE Transactions on Automatic Control*, Vol. 46, No. 10, 2001, pp. 1639-1643.
105. I. A. Shkolnikov and Y. B. Shtessel, "Aircraft Nonminimum Phase Control in Dynamic Sliding Manifolds," *AIAA Journal on Guidance, Control, and Dynamics*, Vol. 24, No. 3, pp. 566-572, 2001.
106. Y. Shtessel, C. Hall, and M. Jackson, "Reusable Launch Vehicle Control in Multiple Time Scale Sliding Modes," *AIAA Journal on Guidance, Control, and Dynamics*, Vol. 23, No. 6, pp. 1013-1020, 2000.
107. I. A. Shkolnikov and Y. B. Shtessel, "Nonminimum Phase Tracking in MIMO Systems with Square Input-Output Dynamics via Dynamic Sliding Manifold," *The Journal of The Franklin Institute*, Vol. 337, No.1, pp. 43-56, 2000.
108. Y. Shtessel, J. Buffington, and S. Banda, "Multiple Time Scale Flight Control Using Re-configurable Sliding Modes," *AIAA Journal on Guidance, Control, and Dynamics*, vol. 22, No. 6, pp. 873-883, 1999.
109. M. E. Jackson and Y. B. Shtessel, "Sliding Mode Thermal Control System For Space Station Furnace Facility," *IEEE Transactions on Control System Technology*, Vol. 6, No. 5, pp. 612-622, 1998.
110. Y. Shtessel, "Sliding Mode Control of the Space Nuclear Reactor System," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 34, No. 2, pp. 579-589, 1998.
111. Y. Shtessel, "Nonlinear Nonminimum Phase Output Tracking Via Dynamic Sliding Manifolds," *The Journal of the Franklin Institute*, vol. 335B, No. 5, pp. 841-850, 1998.
112. C. Tournes, B. Landrum, Y. Shtessel and C. Hawk, "Ramjet-Powered Reusable Launch Vehicle Control by Sliding Modes," *AIAA Journal on Guidance, Control, and Dynamics*, Vol. 21, No. 3, pp. 409-415, 1998.
113. Y. B. Shtessel, O. A. Raznopolov, and L. A. Ozerov, "Control of Multiple Modular DC-to-DC Power Converters in Conventional and Dynamic Sliding Surfaces," *IEEE Transactions on Circuits and Systems, Part I*, Vol. 45, No. 10, pp. 1091-1101, 1998.
114. Y. B. Shtessel, "Nonlinear Output Tracking in Conventional and Dynamic Sliding Manifolds," *IEEE Transactions on Automatic Control*, Vol. 42, No. 9, pp. 1282-1286, 1997.
115. Y. Shtessel, "Principle of Proportional Damages in Multiple Criteria LQR Problem," *IEEE Transactions on Automatic Control*, Vol. 41, No. 3, pp. 461-464, 1996.
116. Y. Shtessel, "Decentralized Sliding Mode Control in Three-Axis Inertial Platforms," *AIAA Journal of Guidance, Control and Dynamics*, Vol. 18, No. 4, pp. 773-781, 1995.

117. Y. Shtessel, "Nonlinear Output Tracking Via Dynamic Sliding Manifolds," *The Journal of the Franklin Institute*, Vol. 332B, No. 6, pp. 735-748, 1995.
118. L. Ozerov, O. Raznopolov, and Y. Shtessel, "Synthesis of Decentralized Open-Loop (Pulse) Management of Independent Power Supply Systems," *Applied Energy: Russian Journal of Fuel, Power, and Heat Systems*, Vol. 32, No. 2, pp. 105-116, 1994.
119. A. Kurakin and Y. Shtessel, "Sliding Mode Control Design in Systems with Random Noise and Disturbances," *Izv. Vuzov USSR Priboroostroenije (Journal of Instrument Engineering)*, No. 12, pp. 15-21, 1991 [in Russian].
120. Y. Shtessel and A. Evnin, "Invariant Sliding Mode Control in Dynamic Systems with Nonlinear Interconnections," *Izv. Vuzov USSR Priboroostroenije (Journal of Instrument Engineering)*, No. 5, pp. 15-21, 1991 [in Russian].
121. L. Ozerov, O. Raznopolov, and Y. Shtessel, "Synthesis of Control with a Pulse Stabilizer Having a Two-Sectioned Filter Based on Sliding Mode," *Academy of Science USSR Elektrichestvo (Electrical Technology)*, No. 7, pp. 77-79, 1990 [in Russian].
122. Y. Shtessel and A. Evnin, "Invariant Control of Output in Nonlinear Systems," *Automation and Remote Control*, Vol. 51, No. 3, Part 1, pp. 315-323, 1990 [in Russian].
123. Y. Shtessel and V. Shtessel, "Invariant Synthesis of Non-Stationary Two-Channel Hydraulic System," *Izv. Vuzov USSR Mashinostroenije (Journal of Mechanical Engineering)*, No. 3, pp. 60-64, 1990 [in Russian].
124. Y. Shtessel and A. Evnin, "Invariant Two-Level Control of Output in Linear Systems," *Izv. Vuzov USSR Priboroostroenije (Journal of Instrument Engineering)*, No. 4, pp. 22-27, 1989 [in Russian].
125. L. Ozerov, O. Raznopolov and Y. Shtessel, "Synthesis of Additional Discontinuous Control in Invariant Systems," *Izv. Vuzov USSR Priboroostroenije (Journal of Instrument Engineering)*, No. 7, pp. 20-24, 1989 [in Russian].
126. A. Kulik, O. Kazmin, and Y. Shtessel, "De coupling of Autonomous Systems of Electric Power Supply with Discontinuous Control," *Izv. Acad. Of Science USSR Energetica i Transport (Power Engineering and Transportation)*, No. 1, pp. 56-64, 1982 [in Russian].
127. Y. Shtessel and O. Karetny, "Multi Criteria Optimization of Third Order Control Systems" *Izv. Vuzov USSR Electromekhanika (Electromechanics)*, No. 12, pp. 148-152, 1978 [in Russian].
128. Y. Shtessel and O. Karetny, "Vector Optimization of Dynamic Systems," *Electroprivod (Electric Drives)*, No. 4, Moscow, Russia, pp. 9-12, 1978 [in Russian].
129. V. Rusakov, B. Itenberg, G. Alejev, and Y. Shtessel, "Design of Cascade Controllers in Electric Drives with Varying Coefficients", *Electroprivod (Electric Drives)*, No. 7, Moscow, Russia, pp. 11-14, 1977 [in Russian].
130. O. Karetny, Y. Shtessel, and B. Yakovlev, "Investigation of Performance Indexes for Dynamic Systems of Automatic Control," *Izv. Vuzov USSR Electromekhanika (Electromechanics)*, No. 8, pp. 878-881, 1976 [in Russian].

III. Peer-reviewed articles/chapters in scholarly books 2019: 10.5772/intechopen.8866

131. Y. Shtessel, F. Plestan, C. Edwards, and A. Levant, Adaptive sliding mode and higher order sliding mode control techniques with applications: a survey, *Sliding-Mode Control and Variable-Structure Systems*, L. Fridman, T. Oliveira (Eds.), Springer, October 2023, pp. 267-305.

132. S. Nateghi and Y. Shtessel, "Resilient Control of Nonlinear Cyber-Physical Systems: Sliding Mode Observer-based Approach," *Security and Resilience in Cyber-Physical Systems*, M. Abbaszadeh and A. Zemouche (Eds), Springer, 2022, pp. 237-265.
133. M. A. E. Alali, Y. Shtessel, and J-P. Barbot, "Grid-Connected Shunt Active LCL Control via Continuous SMC and HOSMC Techniques," *Variable-Structure Systems and Sliding-Mode Control*, M. Steinberger, M. Horn, and L. Fridman (Eds.), Springer, 2020, pp. 275-306.
134. M. A. Cross and Y. Shtessel "Single-Loop Integrated Guidance and Control Using High-Order Sliding Mode Control," *Variable-Structure Systems and Sliding-Mode Control*, M. Steinberger, M. Horn, and L. Fridman (Eds.), Springer, 2020, pp. 433-462.
135. S. Nateghi, Y. Shtessel, C. Edwards, and J.-P. Barbot, "Secure State Estimation and Attack Reconstruction in Cyber Physical Systems: Sliding Mode Observer Approach," *Control Theory in Engineering*, IntechOpen, Edited by C. Volosencu, A. Saghafinia, X. Du and S. Chakrabarty (Eds.), September 18, 2019, DOI: 10.5772/intechopen.88669.
136. Y. Shtessel, F. Aldukali, and F. Plestan, "Hybrid-Impulsive Higher Order Sliding Mode Control," *New Perspectives and Applications of Modern Control Theory*, Clempner, J., Wen, Y. (Eds.) Springer, 2018, pp. 427-463, ISBN: 978-3-319-62464-8.
137. Y. Shtessel, L. Fridman, A. Rosales, and C. B. Panathula, "Practical Stability Phase and Gain Margins Concept," *Advances in Variable Structure Systems and Sliding Mode Control - Theory and Applications*, Li, S., Yu, X., Fridman, L., Man, Z., Wang, X (Eds.), Springer, 2018, pp. 101-132.
138. R. Ashok and Y. B. Shtessel, "Sliding Mode Control of A Fuel Cell Based Electric Power System: Multiple-Modular Configurations," *Advances in Variable Structure and Sliding Mode Control*, L. Fridman, J-P. Barbot, and F. Plestan (Eds.), Springer, 2016, pp. 387-316, ISBN: 978-1-78561-076-9.
139. M. Weiss and Y. Shtessel, "An impulsive input approach to short time convergent control for linear systems," *Advances in Aerospace Guidance, Navigation and Control*, Q. Chu, B. Mulder, D. Choukroun, E. van Kampen, C. de Visser, and G. Looye (Eds.), Springer, July 2013, pp. 99-119.
140. Y. Shtessel and C. Tournes, "Higher Order Sliding Modes for Missile Guidance and Control," *Advances in Missile Guidance, Control and Estimation*, S. Balakrishnan, A. Truordos, and B. White (eds.), CRC Press, Taylor & Francis, 2012, pp. 195-240.
141. Y. Shtessel, S. Baev, C. Edwards, S. Spurgeon, and A. Zinober, "Output Tracking and Observation in Nonminimum Phase Systems via Classical and Higher Order Sliding Modes," *Lecture Notes in Control and Information Science: Sliding Modes after the first Decade of the 21st Century*, Vol. 412, L. Fridman, J. Moreno, and R. Iriarte (eds.), Springer-Verlag, pp. 351-381, 2011.
142. F. Plestan, V. Br'egeault, A. Glumineau, Y. Shtessel, and E. Moulay, "Advanced sliding mode control: high order and adaptive solutions - theory and applications," *Lecture Notes in Control and Information Science: Sliding Modes after the first Decade of the 21st Century*, Vol. 412, L. Fridman, J. Moreno, and R. Iriarte (Eds), Springer-Verlag, pp. 465-493, 2011.
143. C. Tournes, Y. Shtessel, and D. Foreman, "Automatic Space Rendezvous and Docking using Second Order Sliding Mode Control," *Sliding Mode Control*, Andrzej Bartoszewicz (Ed.), ISBN: 978-953-307-162-6, InTech Publisher, 2011, pp. 307-330. Available from: <http://www.intechopen.com/articles/show/title/automatic-space-rendezvous-and-docking-using->

second-order-sliding-mode-control.

144. P. Kaveh and Y. Shtessel, "Blood Glucose regulation via double loop Higher Order Sliding Mode control and multiple sampling rate," *Lecture Notes in Control and Information Science: Modern Sliding Mode Control Theory*, G. Bartolini, A. Pisano, E. Usai, and L. Fridman (eds.), Springer-Verlag, Vol. 375, 2008, pp. 427-445.
145. S. Baev, Y. B. Shtessel, and I. Shkolnikov, "HOSM driven output tracking in the nonminimum-phase causal nonlinear systems," *Lecture Notes in Control and Information Science: Modern Sliding Mode Control Theory*, G. Bartolini, A. Pisano, E. Usai, and L. Fridman (eds.), Springer-Verlag, Vol. 375, 2008, pp. 159-177.
146. Liu, G., Zinober, A. S. I., and Shtessel, Y. B., "Output Delay Systems Tracking Using System Centre Approach and Sliding Mode Control," *Taming Heterogeneity and Complexity of Embedded Control*, F. Lamnabhi-Lagarigue, S. Laghrouche, A. Loria and E. Panteley (eds.), ISTE Publisher, London, UK, February 2007, pp. 471-486.
147. A. Zinober, G. Liu and Y. Shtessel, "Sliding-mode Control in systems with output time delay," *Lecture Notes in Control and Information Sciences, Mathematical Methods for Robust and Nonlinear Control*, Matthew C. Turner Declan G. Bates (Eds), Springer-Verlag, Berlin, Heidelberg, Vol. 367, 2007, pp. 243-264.
148. A. Poznyak, Y. Shtessel, L. Fridman, J. Davila, and J. Escobar, "Identification of Dynamic Systems Parameters via Sliding Mode Technique," *Advances in variable structure and sliding mode control. Lecture Notes in Control and Information Sciences*, E. Fossas, C. Edwards, and L. Fridman (eds.), Springer-Verlag, Berlin, June 2006, pp. 313-351.
149. A. Zinober, Y. Shtessel, E. Fossas, J. Olm, and B. Patterson, "Nonminimum Phase Output Tracking Control Strategies for DC-to-DC Power Converters," *Advances in variable structure and sliding mode control. Lecture Notes in Control and Information Sciences*, E. Fossas, C. Edwards, and L. Fridman (eds.), Springer-Verlag, Berlin, June 2006, pp. 447-482.
150. L. Fridman, A. Poznyak, Y. Shtessel, and F. Bejarano, "Sliding Mode Multimodel Control," *Advances in variable structure and sliding mode control. Lecture Notes in Control and Information Sciences*, E. Fossas, C. Edwards, and L. Fridman (eds.), Springer-Verlag, Berlin, June 2006, pp. 247-271.
151. Y. Shtessel and I. Shkolnikov, "Output Tracking in Causal Nonminimum-Phase Systems Using Sliding Modes," in *IEE Control Series*, Vol. 66, *Variable structure systems: from principles to implementation*, E. Sabanovich, S. Spurgeon and L. Fridman (eds.), IEE-publisher, pp. 197-219, 2004.
152. Y. Shtessel, "Tracking Problem Solution in Interconnected Dynamic Systems on Decentralized Sliding Modes," in *Modeling, Measurement & Control, B*, AMSE Press, Vol. 44, No. 3, pp. 53-63, 1992.
153. Y. Shtessel and B. Pelzwerger, "Multi Criteria Optimal Control in Multi Connected Dynamic Systems," in *Advances in Modeling & Analysis, C*, AMSE Press, Vol. 34, No. 1, pp. 45-55, 1992.
154. Y. Shtessel, "Multi Criteria Sliding Surface Synthesis," in *Multiple Criteria Systems Upon Uncertainties*, South Ural State University, Chelyabinsk, Russia, pp. 130-134, 1988 [in Russian].
155. Y. Shtessel and A. Evnin, "FORTRAN Program for Sliding Surface Design Upon Given Eigenvalues Placement," in *Algoritmi i programmi (Algorithms and Programs)*, No. 6, 1988 [in Russian].

156. Y. Shtessel and A. Evnin, "FORTRAN Program for Simulation of Variable Structure Systems with Disturbances," in *Algoritmi i programmi (Algorithms and Programs)*, No. 3, 1988 [in Russian].
157. A. Kulik, O. Raznopolov, and Y. Shtessel, "Realizable Sliding Modes in Systems with Internal Disturbances," in *Design of Control Algorithms in Complex Systems*, Vol. 6, Taganrog, Russia, pp. 52-55, 1986 [in Russian].
158. Y. Shtessel and A. Kulik, "Optimization of Control Systems with Sliding Modes and Internal Disturbances," in *Control Devices in Automatic Systems*, South Ural State University, Chelyabinsk, Russia, pp. 39-41, 1986 [in Russian].
159. Y. Shtessel, "Multi Criteria Optimal Control of Systems with Sliding Modes," in *Automatic Control in Robots*, South Ural State University, Chelyabinsk, Russia, pp. 54-58, 1986 [in Russian].
160. Y. Shtessel, B. Pelzwerger and A. Loskutov, "Principle of Proportional Damages in Optimization of Interconnected Systems," in *Design of Control Algorithms in Complex Systems*, Vol. 5, Taganrog, Russia, pp. 42-43, 1984 [in Russian].
161. O. Karetny and Y. Shtessel "One Dialogue Method of Decision Making", in *Design of Automatic Systems and Devices*, South Ural State University, Chelyabinsk, Russia, pp. 35-36, 1983 [in Russian].
162. Y. Shtessel and O. Kazmin, "Multi Criteria Optimization of Parameters in Control Systems Upon Limited Power of Electric Supply," in the book *Information and Control Systems and Devices*, South Ural State University, Chelyabinsk, Russia, pp. 36-40, 1978 [in Russian].
163. Y. Shtessel and O. Kazmin, "Algorithm of Multi Criteria Principle of Maximum," in *Control and Information Devices and Systems*, South Ural State University, Chelyabinsk, Russia, pp. 10-12, 1977 [in Russian].
164. Y. Shtessel, "Analysis of Performance Criteria and Vector-Criteria for Dynamic Systems", in *Information and Control Systems and Devices*, South Ural State University, Chelyabinsk, Russia, pp. 15-19, 1976 [in Russian].

IV. Papers published in peer-reviewed proceedings from major scholarly meetings

165. Y. Shtessel, F. Plestan, C. Edwards, "Adaptive sliding mode and second order sliding mode control with applications: a survey," IFAC WC, 2023 – August 2023.
166. R. Jesionowski, Y. Shtessel, F. Plestan, "Generalized Relative Degree Approach to Sliding Mode Control Design for Nonminimum Phase Systems," IFAC WC, 2023 – August 2023.
167. M. Nixon and Y. Shtessel "Robust Adaptive Continuous Spacecraft Formation Control Accounting for Actuator Dynamics," *Proceedings of Variable Structure Systems Workshop*, 2022.
168. Y. Shtessel, C. Tournes, A. Spencer, and L. Montgomery, "Accuracy Improvement of Inertial Measurement Units via Second Order Sliding Mode Observer and Dynamic Inversion," *Proceedings of American Control Conference*, Atlanta, GA, June 2022.
169. R. Jesionowski, Y. Shtessel, and Franck Plestan, Practical Generalized Relative Degree Approach to Sliding Mode Control Design, *Proceedings of American Control Conference*, Atlanta, GA, June 2022.
170. S. Das, Y. Shtessel, and F. Plestan "Identification of Disk Margin and Sensitivity Stability Margin in Finite – Time Convergent Control Systems," *Proceedings of the 7th International*

- Conference on Advances in Control & Optimization of Dynamical Systems*, India, February 2022.
171. R. Jesionowski and Y. Shtessel Missile Sliding Mode Control Using Generalized Relative Degree, *Proceedings of the AIAA SciTech Forum*, January 2022.
 172. Sai Kode and Y. Shtessel “Launch Vehicle Control Design Using Sliding Mode Control Toolbox,” 55th Annual Conference on Information Sciences and Systems, Baltimore, MD, March 24-26, 2021.
 173. M. Nixon and Y. Shtessel, “Reduced Control Authority in a Dispersed Satellite Formation Antenna Array,” *Proceedings of the Conference: 31st AAS/AIAA Space Flight Mechanics Meeting*, Charlotte, NC, February 2021 Paper AAS 21-263.
 174. M. Nixon and Y. Shtessel, “Adaptive Double-Layer Continuous Super-Twisting Control of a Satellite Formation,” *Proceedings of the AIAA SciTech Forum*, January 2021, paper AIAA 2021-0560, <https://doi.org/10.2514/6.2021-0560>.
 175. S. Das, Y. Shtessel, F. Plestan, “Analysis of Stability Margins in a Class of Discrete Nonlinear Time-Invariant Systems via Tsytkin Criterion and Describing Function Technique,” *24th International Conference on System Theory, Control and Computing (ICSTCC)*, October 2020.
 176. S. Das, Y. Shtessel, and F. Plestan, “Phase Margins in a Class of Nonlinear Systems: Lyapunov, Circle Criterion and Describing Function Approaches,” *Proceeding of IFAC World Congress*, Berlin, July 2020.
 177. S. Nateghi, Y. Shtessel, R. Rajesh, S. Das “Control of Nonlinear Cyber-Physical Systems under Attack Using Higher Order Sliding Mode Observer,” *IEEE Conference on Control Technology and Applications (CCTA)*, Canada, July 2020.
 178. S. Das, Y. Shtessel, F. Plestan, S. Nateghi, R. Rajesh, “Gain Margins in a Class of Nonlinear Systems: Lyapunov Approach,” *IEEE Conference on Control Technology and Applications (CCTA)*, Canada, July 2020.
 179. S. Rouquet, M. Ghanes, J-P. Barbot, Y. Shtessel, and L. Merienne, “Energy Management in a Mechatronics System with Delay: A Series Hybrid Electric Vehicle Case,” *IEEE Conference on Control Technology and Applications (CCTA)*, Canada, July 2020.
 180. R. Rajesh, Y. Shtessel, S. Nateghi, and S. Das, “Sensor Performance Improvement Via Measured Input Reconstruction Using Sliding Mode Observers,” *IEEE Conference on Control Technology and Applications (CCTA)*, Canada, July 2020.
 181. M. A. Alali, Z. Sabiri, Y. Shtessel, J-P. Barbot “Grid-Connected Shunt Active Photovoltaic Filter,” *Proceedings of 29th IEEE International Symposium on Industrial Electronics*, Delft, Netherlands, 2020.
 182. S. Kode and Y. Shtessel, “Sliding Mode Control Toolbox for Aerospace Applications: Relative Degree Approach,” *Proceedings of the 2020 AIAA SciTech Forum*, 2020.
 183. M. A. Alali, Y. Shtessel, J-P. Barbot, “Continuous Higher Order Sliding Mode Controller for LCL-Type Grid-Connected Shunt Active Filters,” *Proceedings of 21st European Conference on Power Electronics and Applications*, 2019.
 184. R. Rajesh and Y. Shtessel "Accuracy Improvement of dynamic sensors using Higher Order Sliding Mode Observers", *American Control Conference*, July 2019.
 185. S. Nateghi, Y. Shtessel, J-P. Barbot, and C. Edwards, “Cyber Attack Reconstruction of Nonlinear Systems via Higher-Order Sliding-mode Observer and Sparse Recovery Algorithm” *Proceedings of the Conference on Decision and Control*, December, 2018.

186. M. A. Alali, Y. Shtessel, J-P. Barbot, "Continuous SM Controller with Artificial Increase of Relative Degree for Grid-Connected Shunt Active/LCL Filter," *Proceedings of PEMC18*, 2018.
187. S. S. Das, Y. Shtessel, and F. Plestan, "Phase and Gain Stability Margins for a class of Nonlinear Systems," *Proceedings of IFAC ROCOND*, 2018.
188. A. Rosales, L. Ibarra, L. Fridman, Y. Shtessel, P. Ponce, and A. Molina, "On Parametric Uncertainty in Dynamically Perturbed Sliding Mode Controlled Systems," *Proceedings of Variable Structure Systems Workshop*, 2018.
189. S. Nateghi, Y. Shtessel, J. P. Barbot, and G. Zheng, "Cyber-Attack Reconstruction via Sliding Mode Differentiation and Sparse Recovery Algorithm: Electrical Power Networks Application," *Proceedings of Variable Structure Systems Workshop*, 2018.
190. M. A. Alali, Y. Shtessel, and J. P. Barbot "Control of Grid-Connected Shunt Active/LCL Filter: Continuous Sliding Mode Control Approach," *Proceedings of Variable Structure Systems Workshop*, 2018.
191. M. Cross and Y. Shtessel "A Single-Loop High-Order Sliding Mode Controller for a Missile Interceptor," *Proceedings of Variable Structure Systems Workshop*, 2018.
192. A. Rosales Martínez, L. Ibarra Moyers, L. Fridman, Y. Shtessel, P. Ponce, and A. Molina "On Parametric Uncertainty in Real Sliding Mode Controlled Systems," *Proceedings of Variable Structure Systems Workshop*, 2018.
193. S. Nateghi and Y. Shtessel "Robust Stabilization of Linear Differential Inclusion Using Adaptive Sliding Mode Control" *Proceedings of the American Control Conference*, 2018.
194. M. Cross and Y. Shtessel, "Integrated Guidance Navigation and Control Using High-Order Sliding Mode Control for a Missile Interceptor," *AIAA Science and Technology Forum and Exposition*, January 2018.
195. C. Edwards, P. P Menon, and Y. Shtessel "Super-Twisting Observation for a Class of Lagrangian Systems," *Proceedings of the Conference on Decision and Control*, December 2017.
196. J. M. Olm, D. Biel, V. Repecho, and Y. Shtessel, "On average real sliding dynamics in linear systems," *In Proceedings of IFAC WC*, Toulouse, France, July 2017.
197. A. Pisano, M. Franceschelli, A. Pilloni, Y. Shtessel, and E. Usai, "Retaining Connectivity In Mobile Communication Mesh Networks," *In Proceedings of IFAC WC*, Toulouse, France, July 2017.
198. R. Ashok, Y. Shtessel, and M. Ghanes, "Sliding Mode Control of Hydrogen Fuel Cell and Ultracapacitor Based Electric Power System: Electric Vehicle Application," *In Proceedings of IFAC WC*, Toulouse, France, July 2017.
199. C. B. Panathula, A. Rosales, Y. Shtessel, and L. Fridman, "Closing Gaps for Aircraft Attitude Higher Order Sliding Mode Control Certification," *In Proceedings of the American Control Conference*, July 2017.
200. J. E. Bluman, C. K Kang, and Y. Shtessel, "Sliding Mode Control of a Biomimetic Flapping Wing Micro Air Vehicle in Hover," *AIAA Science and Technology Forum and Exposition*, January 2017.
201. M. Basin, P. Rodriguez-Ramirez, S. X. Ding, T. Daszenies, and Y. Shtessel Continuous Fixed-Time Control for Cart Inverted Pendulum Stabilization, *Proceedings of the Conference on Decision and Control*, December 2016.
202. C. B. Panathula, A. Rosales, Y. Shtessel, and M. Basin, "Robustness Metrics for Nonlinear Uniform Fixed-Time Convergent Second Order Sliding Mode Control", *Conference on Decision and Control*, December 2016.

203. M. Basin, Polk Yu, and Y. Shtessel, "Finite and Fixed Setting Time Differentiators Utilizing Non-Recursive Higher Order Sliding Mode Control Observer," *Proceedings of the Variable Structure Workshop*, Nanjing, China, June 2016 pp. 188-193.
204. M. Basin, Y. Shtessel, and F. Aldukali, "Continuous Finite- and Fixed-Time Regulators," *Proceedings of the Variable Structure Workshop*, Nanjing, China, June 2016.
205. R. Ashok and Y. Shtessel, "Control of a Fuel Cell Vehicle Using Adaptive Sliding Mode Control: Servomotor Application," *Proceedings of American Control Conference*, Boston, MA, July 2016.
206. M. Basin, C. Panathula, Y. Shtessel, and P. Rodriguez-Ramirez, "Continuous Finite-Time Output-Feedback Control for Systems with Unmatched Unbounded Disturbances," *Proceedings of American Control Conference*, Boston, MA, July 2016.
207. M. Basin, C. Panathula, and Y. Shtessel, "Adaptive Fixed-Time Convergent Super-Twisting-like Control," *Proceedings of American Control Conference*, Boston, MA, July 2016.
208. F. Aldukali, Y. Shtessel, A. Glumineau, and F. Plestan, "Impulsive-Super-Twisting Control in Reduced Information Environments," *Proceedings of American Control Conference*, Boston, MA, July 2016.
209. Y. Shtessel, B. Chava, and C. Edwards, "Second Order Sliding Mode Control using Nonlinear Dynamic Sliding Manifold: Lyapunov Approach," *Proceedings of the Conference on Decision and Control*, Osaka, Japan, December 2015.
210. F. M. Aldukali, and Y. B. Shtessel, "Continuous Higher Order Sliding Mode Control with Impulsive Action," *Proceedings of the Conference on Decision and Control*, Osaka, Japan, December 2015.
211. A. Rosales, Y. Shtessel, L. Fridman, and C. B. Panathula, "Frequency Domain Analysis of HOSM Systems," *Proceedings of the Conference on Decision and Control*, Osaka, Japan, December 2015.
212. M. Basin, C. B. Panathula, and Y. Shtessel, "Continuous second-order sliding mode control: convergence time estimation," *Proceedings of the Conference on Decision and Control*, Osaka, Japan, December 2015.
213. C. Edwards, Y. Shtessel, "Adaptive Dual Layer Second-Order Sliding Mode Control and Observation," *Proceedings of American Control Conference*, 2015.
214. A. Palosz, Y. Shtessel, and R. Fork, "Laser Pointing for Orbital Debris Mitigation Using Higher Order Sliding Mode Control and Observation Techniques," *Proceedings of the Conference on Guidance, Navigation and Control*, January 2015.
215. P. Yu, Y. Shtessel, and C. Edwards, "Adaptive Continuous Higher Order Sliding Mode Control of Air Breathing Hypersonic Missile for Maximum Target Penetration," *Proceedings of the Conference on Guidance, Navigation and Control*, January 2015.
216. C. Edwards, Y. Shtessel, "Dual-Layer Adaptive Sliding Mode Control," *Proceedings of American Control Conference*, Seattle, June 2014.
217. C. Edwards, Y. Shtessel, "Adaptive Continuous Higher Order Sliding Mode Control," *Proceedings of IFAC World Congress*, Cape Town, South Africa, 24-29 August 2014.
218. P. Yu, Y. Shtessel, S. S. Mehta, and C. L. Pasilliao, "Air Breathing Hypersonic Missile Continuous Higher Order Sliding Mode Control for Maximum Target Penetration," *Proceedings of the Variable Structure Workshop*, Nantes, France, July 2014.
219. Y. Shtessel, A. Glumineau, F. Plestan, and M. Weiss, "Output Feedback Hybrid-Impulsive Second Order Sliding Mode Control: Lyapunov Approach," *Proceedings of the Variable Structure Workshop*, Nantes, France, July 2014.

220. R. Ashok and Y. Shtessel, "Sliding Mode Control of Electric Power System Comprised of Fuel Cell and Multiple-Modular DC-DC Boost Converters," *Proceedings of the Variable Structure Workshop*, Nantes, France, July 2014.
221. A. Rosales, L. Fridman, and Y. Shtessel, "Practical Relative Degree in SMC systems: Frequency Domain Approach," *Proceedings of the Variable Structure Workshop*, Nantes, France, July 2014.
222. B. Mirkin, P-O Gutman, and Y. Shtessel, "Adaptive control with asymptotical sliding mode of uncertain plants with input and state delays," *Proceedings of the Variable Structure Workshop*, Nantes, France, July 2014.
223. A. Pisano, S. Baev, D. Salimbeni, Y. Shtessel, E. Usai, "A New Approach to Causal Output Tracking for Non-Minimum Phase Nonlinear Systems Via Combined First/second Order Sliding Mode Control," *Proceedings of European Control Conference*, Zurich, Switzerland July 17-19, 2013.
224. R. S. Ashok, Y. Shtessel, and James E. Smith, "Sliding Mode Control of Electric Power System Comprised of Fuel Cells, DC-DC Boost Converters and Ultracapacitors," *Proceedings of American Control Conference*, Washington DC, June 2013.
225. J. Alan Cosby, Y. Shtessel, and A. Bordetsky, "Retaining Connectivity in Multi-Task Communications Network with Multiple Agents: Connectability Theory Approach," *Proceedings of American Control Conference*, Washington DC, June 2013.
226. C. Edwards, P. Menon Prathyush, Y. Shtessel, and A. Bordetsky, "On Connectivity Preservation in Mobile Wireless Multi-Agent/Node Mesh Networks," *Proceedings of American Control Conference*, Washington DC, June 2013.
227. B. Mirkin, P-O. Gutman, and Y. Shtessel, "Tube-based Direct Model Reference Adaptive Control in the Presence of State Time Delays," *Proceedings of IFAC 5th Symposium on System Structure and Control*, Grenoble, France, February, 2013.
228. Y. Shtessel, A. Glumineau, F. Plestan, and M. Weiss, "Hybrid-Impulsive Second Order Sliding Mode Control: Lyapunov Approach," *Proceedings IFAC 5th Symposium on System Structure and Control*, Grenoble, France, February, 2013.
229. A. Glumineau, Y. Shtessel, and F. Plestan, "Lyapunov stability of a Hybrid Impulsive-sliding mode adaptive controller for second order system," *Proceedings of the Conference on Decision and Control*, Hawaii, December 2012.
230. Y. Shtessel, C. Edwards, P. Menon, A. Cosby, and A. Bordetsky, "Predictive modeling and retaining connectivity for mobile wireless communication network," *Proceedings of the IEEE Conference on Technologies for Homeland Security 2012*, 13-15 November, 2012.
231. P. P. Menon, C. Edwards and Y. Shtessel, "Evolving Control for Preserving Connectivity Among Agents of Network with Non-Cooperative Moving Agents," *Proceedings of the American Control Conference*, Montreal, Canada, June 27-29 2012, pp. 2401-2406.
232. J. Alan Cosby, Yuri B Shtessel, Alexander Bordetsky, "Uncooperative Multi-agent Communication Network Control, Hybrid LQ Approach," *Proceedings of the American Control Conference*, Montreal, Canada, June 27-29 2012, pp. 2830-2835.
233. Chandrasekhara Panathula, Farbod Fahimi, and Yuri Shtessel, "Model Predictive Traction Control for Robots on Slippery 3D Terrains," *Proceedings of the American Control Conference*, Montreal, Canada, June 27-29 2012, pp. 4257-4262.
234. J. A. Rosales, Y. Shtessel and L. Fridman, "Phase and Gain Margins in Systems with SMC/HOSM," *Proceedings of the American Control Conference*, Montreal, Canada, June 27-29 2012, pp. 5389-5394.

235. J. Kochalummoottil, Y. Shtessel, J. Moreno, and L. Fridman, "Output Feedback Adaptive Twisting Control: A Lyapunov Design," *Proceedings of the American Control Conference*, Montreal, Canada, June 27-29, 2012, pp. 6172-6177.
236. B. J. Turner, J. R. Williams, Y. B. Shtessel, and R. Adhami, "Integral sliding mode autopilot for rocket stabilization with unmatched disturbances," *Proceedings of the Conference on Guidance, Navigation and Control*, Minneapolis, MN, August 2012.
237. C. Tournes, Y. Shtessel, A. Rosales, and L. Fridman, "Phase and Gain Margins with Third Order Sliding Mode Control: An Integrated Guidance Application," *Proceedings of the Conference on Guidance, Navigation and Control*, Minneapolis, MN, August 2012.
238. J. Kochalummoottil, Y. Shtessel, J. Moreno, and L. Fridman, "Adaptive Twist Sliding Mode Control: a Lyapunov Design," *Proceedings of the Conference on Decision and Control*, Orlando, FL, December 2011.
239. Y. Shtessel, and R. S. Ashok, "PEM Fuel Cell/ DC-DC Boost Power Converter System Control Via Traditional and Higher Order Sliding Modes," *Proceedings of the Conference on Decision and Control*, Orlando, FL, December 2011.
240. A. G. Gallardo-Hernández, L. Fridman, A. Levant, Y. Shtessel, R. Leder, C. Revilla-Monsalve, S. Islas-Andrade, "High-Order Sliding-Mode Control of Blood Glucose Concentration via Practical Relative Degree Identification," *Proceedings of the Conference on Decision and Control*, Orlando, FL, December 2011.
241. Y. Shtessel, D. Foreman, C. Tournes, "Stability Margins in Traditional and Second Order Sliding Mode Control," *Proceedings of the Conference on Decision and Control*, Orlando, FL, December 2011.
242. D. Foreman, C. Tournes, and Y. Shtessel, "Trajectory-Shaping and Precision Guidance of a Spinning Mortar without Angle-State Feedback," *Proceedings of the Conference on Guidance, Navigation and Control*, Portland, OR, August 2011.
243. N. Brown and Y. Shtessel, "Identification of Gimbaled Gyroscopic Systems Using Higher Order Sliding Mode Observers," *Proceedings of the Conference on Guidance, Navigation and Control*, Portland, OR, August 2011.
244. A. Glumineau, Y. Shtessel, and F. Plestan, "Impulsive-sliding mode adaptive control of second order system," *Proceedings of IFAC World Congress*, Milan, Italy, August 2011.
245. Y. Shtessel, F. Plestan, and M. Taleb, "Lyapunov design of adaptive super-twisting controller applied to a pneumatic actuator," *Proceedings of IFAC World Congress*, Milan, Italy, August 2011.
246. B. Mirkin, P.-O. Gutman, and Y. Shtessel, "Continuous Decentralized MRAC with Sliding Mode of Nonlinear Delayed Dynamic Systems," *Proceedings of IFAC World Congress*, Milan, Italy, August 2011.
247. Y. Shtessel, C. Edwards, S. Spurgeon, and J. Kochalummoottil, "Adaptive Finite Reaching Time Control and Continuous Second Order Sliding Modes," *Proceedings of the Conference on Decision and Control*, Atlanta, GA, December 2010.
248. Y. Shtessel, J. Moreno, F. Plestan, L. Fridman, and A. Poznyak, "Super-twisting Adaptive Sliding Mode Control: a Lyapunov Design," *Proceedings of the Conference on Decision and Control*, Atlanta, GA, December 2010.
249. S. Holleran, S. Baev, and Y. Shtessel, "Preventing Disruption of a Mobile Communication Network using Higher Order Sliding Mode Control," *Proceedings of the Conference on Decision and Control*, Atlanta, GA, December 2010.

250. S. Peltsverger, S. Holleran, and Y. Shtessel, "Controlling Connectivity of a Clustered Mobile Communication Network," *Proceedings of the Conference on Decision and Control*, Atlanta, GA, December 2010.
251. Y. Shtessel, C. Hall, S. Baev, and J. Orr, "Flexible Modes Control Using Sliding Mode Observers: Application to Ares I," *Proceedings of the Conference on Guidance, Navigation and Control*, Toronto, Canada, August 2010.
252. J. Stott and Y. Shtessel, "Launch Vehicle Attitude Control Using Higher Order Sliding Modes," *Proceedings of the Conference on Guidance, Navigation and Control*, Toronto, Canada, August 2010.
253. D. Foreman, C. Tournes, and Y. Shtessel, "Interceptor Missile Control – A New Look at Boost and Midcourse," *Proceedings of the Conference on Guidance, Navigation and Control*, Toronto, Canada, August 2010.
254. V. Bregeault, F. Plestan, Y. Shtessel, and A. Poznyak, "Adaptive sliding mode control for an electropneumatic actuator," *Proceedings of 11th International Workshop on Variable Structure Systems*, Mexico City, Mexico, June, 2010.
255. B. Mirkin, P.-O. Gutman, and Y. Shtessel, "Adaptive Continuous Control with Sliding Mode for Plants under Nonlinear Perturbations, External Disturbances and Actuator Failures," *Proceedings of 11th International Workshop on Variable Structure Systems*, Mexico City, Mexico, June, 2010.
256. Y. Shtessel, C. Edwards, S. Spurgeon, and J. Kochalummoottil, "Adaptive Continuous Finite Reaching Time Control and Second Order Sliding Modes," *Proceedings of 11th International Workshop on Variable Structure Systems*, Mexico City, Mexico, June, 2010.
257. B. Mirkin, P.-O. Gutman, and Y. Shtessel, "Coordinated Decentralized Adaptive Control with Sliding Mode of Composite Plants with Time-Varying Delays in Nonlinear Interconnections," *Proceedings of 11th International Workshop on Variable Structure Systems*, Mexico City, Mexico, June, 2010.
258. A. Gallardo Hern'andez, L. Fridman, A. Levant, Y. Shtessel, S. I. Andrade and C. Revilla Monsalve, "High Order Sliding Mode Controller for blood glucose in type 1 diabetes, with relative degree fluctuations," *Proceedings of 11th International Workshop on Variable Structure Systems*, Mexico City, Mexico, June, 2010.
259. D. Foreman, C. Tournes, Y. Shtessel, "Integrated Missile Flight Control Using Quaternions and Third-Order Sliding Mode Control," *Proceedings of 11th International Workshop on Variable Structure Systems*, Mexico City, Mexico, June, 2010.
260. S. Holleran, S. Baev, Y. Shtessel, and P.-O. Gutman, "Reconfiguration of a Mobile Communication Network via Higher-Order Sliding Mode Control," *Proceedings of 11th International Workshop on Variable Structure Systems*, Mexico City, Mexico, June, 2010.
261. D. Foreman, C. Tournes, Y. Shtessel, "Integrated Missile Flight Control Using Quaternions and Third-Order Sliding Mode Control," *Proceedings of the American Control Conference*, Baltimore, June 2010.
262. R. Schaeffel, Y. Shtessel, S. Baev, H. Biglari, "3-Phase AC/DC Boost Converter Power Factor Control Via Traditional and Second Order Sliding Modes," *Proceedings of the American Control Conference*, Baltimore, June 2010.
263. J. M. Olm, X. Ros, and Y. B. Shtessel Stable Inversion-Based Robust Tracking Control in DC-DC Nonlinear Switched Converters, *Proceedings of the Conference on Decision and Control*, Shanghai, China, December, 2009.

264. J. S. Orr and Y. B. Shtessel, Robust Lunar Spacecraft Autopilot Design Using High Order Sliding Mode Control, *Proceedings of the Conference on Guidance, Navigation and Control*, August 2009.
265. C. Tournes, Y. Shtessel, D. Lianos, D. Foreman, and S. Jovanov, "Interceptor Predictive Mid-course Higher Order Sliding Mode Guidance and Control," *Proceedings of the Conference on Guidance, Navigation and Control*, August 2009.
266. Y. Shtessel, C. Edwards, and S. Spurgeon, Second Order Sliding Modes and Finite Reaching Time Adaptive Nonlinear Control, *6th IFAC Symposium on Robust Control Design*, Haifa, Israel, June, 2009.
267. B. Mirkin, P-O. Gutman and Y. Shtessel "Adaptive Sliding Mode MRAC of Delayed Nonlinear Plants with Actuator Failure" 6th IFAC Symposium on Robust Control Design, Haifa, Israel, June, 2009.
268. S. Baev and Y. Shtessel, "Causal Output Tracking in Nonminimum Phase Boost DC/DC Converter Using Sliding Mode Techniques," *Proceedings of the American Control Conference*, Chicago, June 2009.
269. B. Mirkin, P-O. Gutman, and Y. Shtessel, "Continuous Model Reference Adaptive Control with Sliding Mode for a Class of Nonlinear Plants with Unknown State Delay," *Proceedings of the American Control Conference*, Chicago, June 2009.
270. B. Mirkin, P-O. Gutman, and Y. Shtessel, "Adaptive Sliding Mode Tracking of Nonlinear Plants with Multiple Unknown Time-varying State Delays," *Proceedings of Dynamic Systems and Control Conference*, Ann Arbor, Michigan, October 20-22, 2008.
271. Ana Gallardo-Hernandez, Leonid Fridman, Sergio Islas-Andrade, and Yuri Shtessel, "Quasi-Continuous High Order Sliding Modes Controllers Applied to Glucose-Insulin Regulatory System Models," *Proceedings of the Conference on Decision and Control*, Cancun, Mexico, December, 2008.
272. S. Baev, Y. Shtessel, C. Edwards, and S. Spurgeon, "Output feedback tracking in causal nonminimum-phase nonlinear systems using HOSM techniques," *Proceedings of 10th International Workshop on Variable Structure Systems*, Turkey, Antalya, June, 2008.
273. B. Mirkin, P.-O. Gutman, and Y. Shtessel, "Sliding Mode Adaptive Following of Nonlinear Plants with unknown State Delay," *Proceedings of 10th International Workshop on Variable Structure Systems*, Turkey, Antalya, June, 2008.
274. A. Zinober, Gang Liu, and Y. Shtessel, "Second Order Sliding Mode Control for SISO Output Delay System Tracking," *Proceedings of 10th International Workshop on Variable Structure Systems*, Turkey, Antalya, June, 2008.
275. Y. Shtessel and S. Baev, "Active Compensation of Low Frequency Flexible Modes of Crew Launch Vehicle Using Sliding Mode Observers," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2008-7127, 2008.
276. J. Orr and Y. Shtessel, "Robust Control of Lunar Spacecraft Powered Descent Using a Second Order Sliding Mode Technique," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2008-6815, 2008.
277. C. Tournes and Y. Shtessel, "Integrated guidance and autopilot for dual controlled missiles using higher order sliding mode controllers and observers," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2008-7433, 2008
278. D. Galzi and Y. Shtessel, "Unmanned Rotorcraft Tight Formation Flight Control Using Sliding Mode Control Driven by Sliding Mode Disturbance Observers," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2008-7171, 2008.

279. P. Kaveh and Y. Shtessel, "Blood Glucose Regulation via Double Loop Higher Order Sliding Mode Control and Multiple Sampling Rate," *Proceedings of IFAC World Congress*, Seoul, Korea, 2008
280. C. Tournes and Y. Shtessel, "Integrated Autopilot and Guidance for Dual Control Missiles Using Higher Order Sliding Mode Control and Observers," *Proceedings of IFAC World Congress*, Seoul, Korea, 2008
281. S. Baev, Y. Shtessel, and C. Edwards, "HOSM observer for a class of non-minimum phase causal nonlinear MIMO systems," *Proceedings of IFAC World Congress*, Seoul, Korea, 2008.
282. S. Baev, Y. B. Shtessel, and I. Shkolnikov, "HOSM driven output tracking in the nonminimum-phase causal nonlinear systems," *Proceedings of the Conference on Decision and Control*, December, 2007.
283. S. Baev, Y. B. Shtessel, H. Biglari, and R. Adhami, "Sliding Mode Control of a Unity Power Factor AC-to-DC boost converter," *Proceedings of the Conference on Decision and Control*, December, 2007.
284. C. H. Tournes, and Y. B. Shtessel, "Automatic Docking using Optimal Control and Second Order Sliding Mode Control," *Proceedings of the Conference on Guidance, Navigation and Control*, August 2007.
285. L. Besnard, Y. Shtessel, and B. Landrum "Control of a Quadrotor Vehicle Using Sliding Mode Disturbance Observer," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2007-6316, August 2007.
286. L. Fokin, A. Shchipitsyn, and Y. Shtessel "Adaptive SINS/ANS/GNSS for Air-Start Space Launcher: Algorithm Design and Performance Analysis," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2007-6760, August 2007.
287. D. Galzi, and Y. B. Shtessel, "Formation Flight Strategy and Control Using Higher-Order Sliding-Modes," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2007-6768, August 20-23, 2007.
288. C. H. Tournes, and Y. B. Shtessel, "Automatic Docking Using Second Order Sliding Mode Control," *Proceedings of the American Control Conference*, NY, July 2007.
289. D. Galzi, and Y. B. Shtessel, "Closed-Coupled Formation Flight Control Using Quasi-Continuous High-Order Sliding-Mode," *Proceedings of the American Control Conference*, NY, July, 2007.
290. L. M. Fridman, Y. B. Shtessel, C. Edwards, and X.-G. Yan, "State Estimation and Input Reconstruction in Nonlinear Systems via Higher Order Sliding Mode Observer," *Proceedings of the American Control Conference*, NY, July 2007.
291. L. Besnard, Y. B. Shtessel, and B. Landrum, "Control of a Quadrotor Vehicle Using Sliding Mode Disturbance Observer," *Proceedings of the American Control Conference*, NY, July 2007.
292. S. Baev, Y. B. Shtessel, and I. A. Shkolnikov, "Nonminimum-phase output tracking in causal systems using higher order sliding modes," *Proceedings of the American Control Conference*, NY, July 2007.
293. J. English, Y. Shtessel, M. Yegnaraman, and M. George, "Microcantilever Sensor via Second Order Sliding Mode Control," *Proceedings of Nanotech Symposium*, ISBN 0-9767985-8-1, Vol. 3, Boston, MA, pp. 566-569, 2006.
294. S. Baev, I. Shkolnikov, Y. Shtessel, and A. Poznyak, "Parameter Identification of Non-Linear System Using Traditional and High Order Sliding Modes," *Proceedings of the American Control Conference*, Minneapolis, MN, June 2006.

295. D. Galzi, and Y. Shtessel, "UAV Formations Control Using High Order Sliding Modes," *Proceedings of the American Control Conference*, Minneapolis, MN, June 2006.
296. M. Yegnaraman, Y. B. Shtessel, M. A. George and Jennifer English, "Microcantilever Sensor Using Second Order Sliding Mode Control," *Proceedings of the American Control Conference*, Minneapolis, MN, June 2006.
297. Y. Shtessel, C. Tournes, and I. Shkolnikov, "Guidance and Autopilot for Missiles Steered by Aerodynamic Lift and Divert Thrusters using Second Order Sliding Modes," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2006-6784, Denver, CO, August, 2006.
298. C. Tournes, and Y. Shtessel, "Predictive Launcher Guidance using Second Order Sliding Mode Control," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2006-6799, Denver, CO, August, 2006.
299. M. A. Lawler, C. Spaulding, M. B. Tischler and Y. B. Shtessel, "System Identification of a Tandem-Rotor Helicopter Including Higher-Order Dynamics," *Proceedings of the Conference on Guidance, Navigation and Control*, Paper AIAA-2006-6147, Denver, CO, August, 2006.
300. P. Kaveh, and Y. Shtessel, "Higher Order Sliding Mode Control for Blood Glucose Regulation," *Proceedings of 9th International Workshop on Variable Structure Systems*, Italy, Alghero, June, 2006
301. I. A. Shkolnikov, Y. B. Shtessel, and R. Adhami, "Digital Sliding Modes and Quasi-Exact Tracking Discrete-Valued Signals," *Proceedings of 9th International Workshop on Variable Structure Systems*, Italy, Alghero, June 2006
302. O. Iskrenovic-Momcilovic, C. Milosavljevic, and Y. Shtessel, "Discrete-Time Variable Structure Control for Causal Nonminimum Phase System Using Stable System Center," *Proceedings of 9th International Workshop on Variable Structure Systems*, Italy, Alghero, June 2006.
303. E. Kosiba, G. Liu, Y. Shtessel, and A. Zinober, "Output Tracking via Sliding Modes in Causal Systems with Time Delay Modeled by Higher Order Padé Approximations," *Proceedings of 9th International Workshop on Variable Structure Systems*, Italy, Alghero, June, 2006.
304. A. Poznyak, J. Escobar, and Y. Shtessel, "Stochastic Sliding Modes Identification," *Proceedings of 9th International Workshop on Variable Structure Systems*, Italy, Alghero, June, 2006.
305. P. Kaveh, A. Ashrafi and Y. Shtessel, "Integral and Second Order Sliding Mode Control of Harmonic Oscillator," *Proceedings of the Conference on Decision and Control*, December 2005.
306. J. Patterson and Y. Shtessel, "Sliding mode tracking control of output voltage in multiple modular boost power converters using the method of stable system center," *Proceedings of the Conference on Decision and Control*, December 2005, pp.1246-1251.
307. C. Tournes, Y. Shtessel, and I. Shkolnikov, "Autopilot for Missiles Steered by Aerodynamic Lift and Divert Thrusters using Nonlinear Dynamic Sliding Manifolds," *Proceedings of the Conference on Guidance, Navigation and Control*, paper AIAA-2005-6382, 2005.
308. C. Hall, and Y. Shtessel, "Sliding Mode Observer Driven Sliding Mode Control of a Reusable Launch Vehicle," *Proceedings of the Conference on Guidance, Navigation and Control*, paper AIAA-2005-6145, 2005.

309. G. M. Marks, Y. B. Shtessel, H. Gratt, and I. A. Shkolnikov, "Effects of High Order Sliding Mode Guidance and Observers On Hit-to-Kill Interceptions," *Proceedings of the Conference on Guidance, Navigation and Control*, paper AIAA-2005-5967, 2005.
310. D. Galzi and Y. Shtessel, "UAV Formations Control Using High Order Sliding Modes," *Proceedings of the Conference on Guidance, Navigation and Control*, paper AIAA-2005-6367, 2005.
311. C. Tournes, Y. Shtessel, I. Shkolnikov, and James Stott "Second-Order Sliding Mode Autopilot for Missiles Steered by Aerodynamic Lift and Divert Thrusters," *Proceedings of 17th IMACS World Congress*, Paris, France, July 11-15, 2005.
312. Y. Shtessel, J. Stott, and J. Zhu, "Reusable launch vehicle control via time-varying multiple time scale sliding modes," *Proceedings of 17th IMACS World Congress*, Paris, France, July 11-15, 2005.
313. Y. Shtessel, I. Shkolnikov, and A. Levant, "Missile Interceptor Guidance and Control Using Second Order Sliding Modes," *Proceedings of IFAC World Congress*, Prague, Czech Republic, 2005.
314. C. Tournes, Y. Shtessel, and I. Shkolnikov, "Missile Autopilot controlled by Aerodynamic Lift and Divert Thrusters via Second-Order Sliding Mode," *Proceedings of IFAC World Congress*, Prague, Czech Republic, 2005.
315. Y. B. Shtessel, and A. S. Poznyak, "Parameter Identification of Affine Time Varying Systems Using Traditional and High Order Sliding Modes," *Proceedings of the American Control Conference*, Portland, OR, June 2005.
316. I. Shkolnikov, Y. Shtessel, and S. Plekhanov, Multi-rate Digital Design for Sliding-Mode-Observer-based Feedback Control," *Proceedings of the American Control Conference*, Portland, OR, June 2005.
317. P. Kaveh, A. Ashrafi and Y. Shtessel, "Robust harmonic oscillator control via integral and high order sliding modes," *Proceedings of 8th International Workshop on Variable Structure Systems*, Spain, Vilanova, September 6-8, 2004.
318. Y. B. Shtessel, and A. S. Poznyak, "Parameter identification of linear time varying systems via traditional and high order sliding modes," *Proceedings of 8th International Workshop on Variable Structure Systems*, Spain, Vilanova, September 6-8, 2004.
319. R. Carrido, Y. Shtessel, and L. Fridman, "Application of VS differentiators to DC servomechanisms," *Proceedings of 8th International Workshop on Variable Structure Systems*, Spain, Vilanova, September 6-8, 2004.
320. T. Massey and Y. Shtessel, "Satellite Formation Control Using Traditional and High Order Sliding Modes," *Proceedings of the Conference on Guidance, Navigation and Control*, AIAA-2004-5021, Providence, RI, August 2004.
321. Y. B. Shtessel and I. Shkolnikov, "Integrated Guidance and Control of Advanced Interceptors Using Second Order Sliding Modes," *Proceedings of the Conference on Decision and Control*, Hawaii, December 2003.
322. Y. B. Shtessel, J. Stott and J. Jim. Zhu, "Time-varying Sliding Mode Control With Sliding Mode Observer For Reusable Launch Vehicle," *Proceedings of the Conference on Guidance, Navigation and Control*, AIAA-2003-5362, Austin, TX, August 2003.
323. C. E. Hall and Y. B. Shtessel, "Flight Control System Design of a Reusable Launch Vehicle Using Sliding Mode Control, Sliding Mode Observers and Gain Adaptation," *Proceedings of the Conference on Guidance, Navigation and Control*, AIAA-2003-5437, Austin, TX, August 2003.

324. Y. B. Shtessel and I. A. Shkolnikov, "Aeronautical and Space Vehicle Control in Dynamic Sliding Manifolds," *Proceedings of 4th IFAC Symposium on Robust Control Design (ROCOND 2003)*, Milan, Italy, June 2003.
325. S. Plekhanov, I. A. Shkolnikov, and Y. B. Shtessel, "High Order Sigma-Delta Modulator Design via Sliding Mode Control," *Proceedings of the American Control Conference*, Denver, CO, June 2003.
326. A. Poznyak and Y. Shtessel, "Mini-Max Sliding Mode Control with Minimum Time Reaching Phase" *Proceedings of the American Control Conference*, Denver, CO, June 2003.
327. Y. Shtessel, A. Zinober, and I. Shkolnikov, "Boost and Buck-boost Power Converters Control via Sliding Modes using Method of Stable System Centre," *Proceedings of the Conference on Decision and Control*, pp. 340-345, December 2002.
328. Y. Shtessel, A. Zinober, and I. Shkolnikov, "Sliding Mode Control Using Method of Stable System Centre for Nonlinear Systems with Output Delay," *Proceedings of the Conference on Decision and Control*, pp. 993-998, December 2002.
329. Y. Shtessel, A. Zinober, and I. Shkolnikov, "Boost and Buck-boost Power Converters Control via Sliding Modes Using Dynamic Sliding Manifold," *Proceedings of the Conference on Decision and Control*, pp. 2456-2461, December 2002.
330. Y. B. Shtessel, I. A. Shkolnikov, S. V. Plekhanov, and D. P. Lianos, "Integrated Homing Guidance-Control System for Endo-Atmospheric Intercept in Sliding Modes," *Proceedings of IFAC World Congress*, Barcelona, Spain, 2002.
331. I. A. Shkolnikov, and Y. B. Shtessel, "A Multiple-Loop Sliding Mode Control System with Second-Order Boundary Layer Dynamics," *Proceedings of IFAC World Congress*, Barcelona, Spain, 2002.
332. J. Zhu, D. Lawrence, J. Fisher, Y. Shtessel, A. S. Hodel, and P. Lu, "Direct Fault Tolerant RLV Attitude Control – A Singular Perturbation Approach," *Proceedings of the Conference on Guidance, Navigation and Control*, 2002.
333. Y. Shtessel, J. Zhu, and D. Daniels, "Reusable Launch Vehicle Attitude Control Using A Time-Varying Sliding Mode Control Technique," *Proceedings of the Conference on Guidance, Navigation and Control*, 2002.
334. S. Hodel and Y. Shtessel, "On-line Computation of a Local Attainable Moment Set for Reusable Launch Vehicles," *Proceedings of the Conference on Guidance, Navigation and Control*, 2002.
335. I. A. Shkolnikov, Y. B. Shtessel and S. V. Plekhanov, "Analog-to-Digital Converters: Sliding Mode Observer as a Pulse Modulator," *Proceedings of the Conference on Decision and Control*, Orlando, FL, December, 2001.
336. I. A. Shkolnikov, Y. B. Shtessel, P. Zarchan, and D. P. Lianos, "Simulation Study of the Homing Interceptor Guidance Loop With Sliding Mode Observers versus Kalman Filter," *Proceedings of the Conference on Guidance, Navigation, and Control*, AIAA Paper # 2001-4216, Montreal, Canada, August 2001.
337. M. D. J. Brown and Y. B. Shtessel, "Disturbance Cancellation Techniques for MIMO Finite Reaching Time Continuous Sliding Mode Control," *Proceedings of the Conference on Guidance, Navigation, and Control*, AIAA Paper # 2001-4167, Montreal, Canada, August, 2001.
338. I. A. Shkolnikov, Y. B. Shtessel, and D. P. Lianos, "Integrated Guidance-Control System of a Homing Interceptor: Sliding Mode Approach," *Proceedings of the Conference on Guidance, Navigation, and Control*, Montreal, AIAA Paper # 2001-4218, Canada, August, 2001.

339. I. A. Shkolnikov, Y. B. Shtessel, P. Zarchan, and D. P. Lianos, "Sliding Mode Observers versus Kalman Filters in the Homing Loop," *Proceedings of the AIAA/BMDO Technology Conference and Exhibit*, Williamsburg, VA, July, 2001.
340. I. Shkolnikov and Y. B. Shtessel, "Causal nonminimum-phase tracking in nonlinear systems: servocompensator enforced via sliding mode control," *Proceedings of the American Control Conference*, Washington, DC, June 2001.
341. Y. B. Shtessel and C. E. Hall, "Multiple time scale sliding mode control of reusable launch vehicles in ascent and descent modes," *Proceedings of the American Control Conference*, Washington, DC, June 2001, pp. 4357-4362.
342. M. Brown and Y. B. Shtessel, "Disturbance rejection techniques for Finite Reaching Time Continuous Sliding Mode Control," *Proceedings of the American Control Conference*, Washington, DC, June 2001.
343. D. Krupp, I. A. Shkolnikov and Y. B. Shtessel, "2-Sliding Mode Control for Nonlinear Plants with Parametric and Dynamic Uncertainties," *Proceedings of the Conference on Guidance, Navigation, and Control*, Denver, CO, AIAA paper No. 2000-3965, 2000.
344. I. A. Shkolnikov, Y. B. Shtessel, M. Whorton and M. Jackson, "Robust to Noise Microgravity Isolation Control System Design via High-Order Sliding Mode Control," *Proceedings of the Conference on Guidance, Navigation, and Control*, Denver, CO, AIAA paper No. 2000-3954, 2000.
345. M. D. Brown, Y. B. Shtessel, and J. M. Buffington, "Finite Reaching Time Continuous Sliding Mode Control With Enhanced Robustness," *Proceedings of the Conference on Guidance, Navigation, and Control*, Denver, CO, AIAA paper No. 2000-3964, 2000.
346. I. A. Shkolnikov, Y. B. Shtessel, D. Lianos, and A. T. Thies, "Robust Missile Autopilot Design via High-Order Sliding Mode Control," *Proceedings of the Conference on Guidance, Navigation, and Control*, Denver, CO, AIAA paper No. 2000-3968, 2000.
347. Y. Shtessel, C. Hall, and M. Jackson, "Reusable Launch Vehicle Control in Multiple Time Scale Sliding Modes," *Proceedings of the Conference on Guidance, Navigation, and Control*, Denver, CO, 2000.
348. Y. Shtessel and C. Hall, "Sliding Mode Control of the X-33 with an Engine Failure," *Proceedings of the Joint Propulsion Conference and Exhibit*, AIAA paper No. 2000-3883, Huntsville, 2000.
349. I. Shkolnikov, Y. Shtessel, M. Whorton and M. Jackson, "Microgravity Isolation Control System Design via High-Order Sliding Mode Control," *Proceedings of the American Control Conference*, pp. 2072-2076, Chicago, IL, 2000.
350. D. Krupp, I. Shkolnikov, and Y. Shtessel, "High Order Sliding Modes in Dynamic Sliding Manifolds: SMC Design for the Systems with Uncertain Actuator Dynamics Using Only Output Information," *Proceedings of the American Control Conference*, Chicago, pp. 124-128, 2000.
351. Y. Shtessel and I. Shkolnikov, "Casual Nonminimum Phase Output Tracking in MIMO Nonlinear Systems in Sliding Modes: Stable System Center Technique," *Proceedings of the Conference on Decision and Control*, Phoenix, AZ, December 7-10, pp. 4790-4795, 1999.
352. Y. Shtessel, J. Buffington, and S. Banda, "Tailless Aircraft Flight Control Using Multiple Time Scale Re-configurable Sliding Modes," *Proceedings of the Conference on Guidance, Navigation, and Control*, Portland, OR, August 9-11, paper # AIAA 99-4136, 1999.
353. I. Shkolnikov and Y. Shtessel, "Tracking MIMO Nonlinear Nonminimum Phase Systems Using Dynamic Sliding Manifolds," *Proceedings of the Conference on Guidance, Navigation, and Control*, Portland, OR, August 9-11, AIAA paper # AIAA 99-4088, 1999.

354. P. Wang and Y. B. Shtessel, "Satellite Attitude Control via Magnetorquers Using Switching Control Laws," *Proceedings of IFAC World Congress*, Beijing, Paper No. P-8a-03-6, pp. 343-348, July 1999.
355. I. Shkolnikov and Y. Shtessel, "Nonminimum Phase Output Tracking via Sliding Mode Control: Stable System Center Technique," *Proceedings of the 7th IEEE Mediterranean Conference on Control and Automation*, Haifa, Israel, June 28-30, pp. 2399-2420, 1999.
356. D. Krupp and Y. Shtessel, "Chattering-free Sliding Mode Control with Unmodeled Dynamics," *Proceedings of the American Control Conference*, San Diego, CA, June 2-4, pp. 530-534, 1999.
357. B. J. Smith, W. J. Schrenk, W. B. Gass, and Y. B. Shtessel, "Sliding Mode Control in a Two Axis Gimbal System," *Proceedings of the IEEE Aerospace Conference*, March 6-13, Snowmass, CO, 1999.
358. Y. Shtessel and J. Buffington, "Finite-reaching-time continuous sliding mode controller for MIMO nonlinear systems," *Proceedings of the Conference on Decision and Control*, Tampa, FL, December 16-18, pp. 1934-1935, 1998.
359. Y. Shtessel, J. Buffington and S. Banda, "Multiple Time Scale Flight Control Using Re-configurable Sliding Modes," *Proceedings of the Conference on Decision and Control*, Tampa, FL, December 16-18, pp. 4196-4201, 1998.
360. Y. Shtessel, J. McDuffie, M. Jackson, C. Hall, D. Krupp, M. Gallaher, and N. Hendrix, "Sliding Mode Control of the X33 Vehicle in Launch and Re-entry Modes," *Proceedings of the Conference on Guidance, Navigation, and Control*, Boston, MA, August 10-12, AIAA paper # 98-4414, pp. 1352-1362, 1998.
361. Y. Shtessel, J. Buffington, M. Pachter, P. Chandler, and S. Banda, "Re-configurable Flight Control on Sliding Modes Addressing Actuator Deflection and Deflection Rate Saturation," *Proceedings of the Conference on Guidance, Navigation, and Control*, Boston, MA, August 10-12, AIAA paper # 98-4112, pp. 127-137, 1998.
362. P. Wang and Y. Shtessel, "Satellite Attitude Control Using Only Magnetorquers," *Proceedings of the Conference on Guidance, Navigation, and Control*, Boston, MA, August 10-12, AIAA paper # 98-4430, pp. 1490-1498, 1998.
363. Y. Shtessel, M. Jackson, C. Hall, D. Krupp, and N. D. Hendrix, "Sliding Mode Control of the X33 Vehicle in Launch Mode," *Proceedings of the American Control Conference*, Philadelphia, June 24-26, pp. 1143-1144, 1998.
364. Y. Shtessel and J. Buffington, "Continuous Sliding Mode Control," *Proceedings of American Control Conference*, Philadelphia, June 24-26, pp. 562-563, 1998.
365. J. Buffington and Y. Shtessel, "Actuator limit and integrator windup protection for feedback linearizable systems," *Proceedings of the American Control Conference*, Philadelphia, June 24-26, pp. 1028-1032, 1998.
366. P. Wang and Y. Shtessel, "Satellite Attitude Control Using Only Magnetorquers," *Proceedings of the American Control Conference*, Philadelphia, June 24-26, pp. 222-226, 1998.
367. C. Tournes and Y. Shtessel, "Control of Transient Deviations from Adaptation Lines in Turbojet Engine Compressor Fields via Sliding Mode Control," *Proceedings of Conference on Control Applications*, Hartford, Connecticut, October 5-7, pp. 791-796, 1997.
368. Y. Shtessel, C. Tournes, and D. Krupp, "Reusable Launch Vehicle Control in Sliding Modes," *Proceedings of the Conference on Guidance, Navigation, and Control*, New Orleans, LA, August 11-13, paper # AIAA 97-3533, pp. 335-345, 1997.

369. J. McDuffie and Y. Shtessel, "A De-coupled Sliding Mode Controller and Observer for Satellite Attitude Control," *Proceedings of the Conference on Guidance, Navigation, and Control*, New Orleans, LA, August 11-13, paper # AIAA 97-3755, pp. 1613-1619, 1997.
370. Y. Shtessel and C. Tournes, "Flight Control Reconfiguration on Sliding Modes," *2Proceedings of the Conference on Guidance, Navigation, and Control*, New Orleans, LA, August 11-13, AIAA paper # 97-3632, pp. 1288-1298, 1997.
371. C. Tournes and Y. Shtessel, "Sliding Mode Control for Tailless Aircraft," *Proceedings of the Conference on Guidance, Navigation, and Control*, New Orleans, LA, August 11-13, AIAA paper # 97-3633, pp. 1299-1309, 1997.
372. Y. Shtessel and D. Krupp, "Reusable Launch Vehicle Trajectory Control in Sliding Modes," *Proceedings of the American Control Conference*, June 4-6, Albuquerque, NM, pp. 2557-2561, 1997.
373. J. McDuffie and Y. Shtessel, "De-coupled Sliding Mode Control of Microsatellite Attitude," *Proceedings of the American Control Conference*, June 4-6, Albuquerque, NM, pp. 564-565, 1997.
374. C. Tournes, Y. Shtessel, and B. E. Wells, "Upper Stage Rocket Guidance and Control Using Discontinuous Reaction Control Thrusters via Sliding Modes," *Proceedings of the American Control Conference*, June 4-6, Albuquerque, NM, pp. 2547-2551, 1997.
375. Y. B. Shtessel, O. A. Raznopolov, and L. A. Ozerov, "Control of Multiple Modular DC-to-DC Power Converters in Conventional and Dynamic Sliding Surfaces," *Proceedings of the American Control Conference*, June 4-7, Albuquerque, NM, pp. 2562-2566, 1997.
376. Y. B. Shtessel and Y. J. Lee, "New Approach to Chattering Analysis in Systems with Sliding Modes," *Proceedings of the Conference on Decision and Control*, Kobe, Japan, December 11-13, pp. 4014-4019, 1996.
377. Y. Shtessel and C. Tournes, "Nonminimum Phase Output Tracking in Dynamic Sliding Manifolds with Application to Aircraft Control," *Proceedings of the Conference on Decision and Control*, Kobe, Japan, December 11-13, pp. 2071-2076, 1996.
378. Y. B. Shtessel, O. A. Raznopolov, and L. A. Ozerov, "Sliding Mode Control of Multiple Modular DC-to-DC Power Converters," *Proceedings of the IEEE International Conference on Control Applications*, Dearborn, MI, September 15-18, pp. 685-690, 1996.
379. Y. Shtessel, and Y. Orlov, "Nonminimum Phase Output Tracking Via Dynamic Sliding Manifolds," *Proceedings of the IEEE International Conference on Control Applications*, Dearborn, MI, September 15-18, pp. 1066-1071, 1996.
380. C. Tournes and Y. Shtessel, "Aircraft Control Using Sliding Mode Control," *Proceedings of the Conference on Guidance, Navigation, and Control*, San Diego, CA, July 29-31, AIAA paper # 96-3692, 1996.
381. Y. B. Shtessel and F. J. Wyant, "Sliding Mode Control of the Space Nuclear Reactor System TOPAZ II," *Proceedings of the International Forum on Space Technology & Applications*, Albuquerque, NM, January 7-11, American Institute of Physics, NY, pp. 1177-1182, 1996.
382. M. E. Jackson and Y. B. Shtessel, "De-coupled Thermal Controller Space Station Furnace Facility Using Sliding Mode Techniques," *Proceedings of the International Forum on Space Technology & Applications*, Albuquerque, NM, January 7-11, American Institute of Physics, NY, pp. 903-910, 1996.
383. Y. Shtessel, "Enhanced Sliding Mode Control of the Space Nuclear Reactor System," *Proceedings of the Conference on Decision and Control*, New Orleans, Louisiana, December 13-15, Vol. 3, pp. 2468-2473 1995.

384. Y. Shtessel and C. Tournes, "Nonlinear Flight Control Problem on Decentralized Sliding Modes," *Proceedings of the IEEE Conference on Control Applications*, Albany, New York, September 28-29, pp. 488-492, 1995.
385. Y. Shtessel, "Decentralized Sliding Mode Control in Inertial Navigation Systems", *Proceedings of the American Control Conference*, June 21-23, Seattle, Washington, pp. 3541-3545, 1995.
386. Y. Shtessel, "Nonlinear Sliding Manifolds in Nonlinear Output Tracking Problem", *Proceedings of the American Control Conference*, Seattle, Washington, pp. 1026 – 1027, 1995.
387. Y. Shtessel, "Nonlinear Output Tracking Via Nonlinear Dynamic Sliding Manifolds", *Proceedings of the International Symposium on Intelligent Control*, August 16-18, Columbus, Ohio, pp. 297-302, 1994.
388. Y. Shtessel, "Wing Missiles Stabilization Based on Sliding Mode Control," *Proceedings of the IEEE Conference on Aerospace Control Systems*, May 25-27, Westlake Village, CA, pp. 574-578, 1993.
389. Y. Shtessel, "Sliding Modes and Differential-Algebraic Equations in Pulse Voltage Stabilizers Synthesis," *Proceedings of the International Symposium on Implicit and Nonlinear Systems*, Ft. Worth, Texas, pp. 390-394, 1992.
390. Y. Shtessel, "Sliding Modes Synthesis in Nonlinear Dynamic Systems with Applications in Pulse Voltage Stabilizers," *Proceedings of the Conference on Decision and Control*, Tucson, AZ, pp. 2366-2367, 1992.
391. Y. Shtessel, "Multi Criteria Optimal Control in Dynamic Systems," *Proceedings of the IEEE Conference on Control Applications*, Dayton, OH, pp. 472-473, 1992.
392. Y. Shtessel and A. Evnin, "Stability of the System Center," *Proceedings of the All-Soviet Union Seminar on Cybernetics of Electric Power Systems*, Chelyabinsk, Russia, p. 40, 1990. [in Russian]
393. Y. Shtessel, "Sliding Modes Design in Autonomous Systems of Electric Power Supply," *Proceedings of the All-Soviet Union Seminar on Cybernetics of Electric Power Systems*, Chelyabinsk, Russia, pp. 74-75, 1990. [in Russian]
394. Y. Shtessel and A. Evnin, "De-coupling and Optimization of Autonomous Systems of Electric Power Supply with Disturbances on the Basis of Sliding Modes," *Proceedings of the All-Soviet Union Conference on De-coupling and Coordination in Complex Systems*, Chelyabinsk, Russia, pp. 149-159, 1987. [in Russian]
395. A. Kulik and Y. Shtessel "De-coupling and Optimization of Variable Structure Systems," *Proceedings of the All-Soviet Union Conference on De-coupling and Coordination in Complex Systems*, Vol. 2, Chelyabinsk, Russia, pp. 57-58, 1986. [in Russian]
396. Y. Shtessel and A. Evnin, "Control Systems with Non Stationary Sliding Surfaces," *Proceedings of the All-Soviet Union Conference on De-coupling and Coordination in Complex Systems*, Vol. 2, Chelyabinsk, Russia, pp. 59-60, 1986. [in Russian]
397. A. Kulik, O. Raznopolov, and Y. Shtessel, "Optimization of Autonomous Systems of Electric Power Supply with Discontinues Control," *Proceedings of the All-Soviet Union Seminar on CAD in Electric Devices and Systems*, Moscow, Russia, pp. 90-92, 1985. [in Russian]
398. B. Pelzwerger and Y. Shtessel, "Multi Criteria Optimal Control in Multi Connected Systems," *Proceedings of the Seminar on Dynamics of Non-uniform Systems*, The All-Soviet Union Institute of System Research, Moscow, Russia, pp. 43-46, 1985. [in Russian]

399. A. Kulik, and Y. Shtessel, "Multi-Level Control Algorithm in Variable Structure Systems," *Proceedings of the First Conference on Synthesis and Design of Multi-Level Control Systems*, Vol. 1, Barnaul, Russia, pp. 116-117, 1982. [in Russian]
400. A. Kulik, O. Raznopolov, O. Kazmin, and Y. Shtessel, "Multi-Level Optimization of Singular Perturbed Systems with Discontinues Control in Electric Power Engineering," *Proceedings of the All-Soviet Union Seminar on CAD of Electric Devices in Autonomous Electric Power Engineering*, Vol. 3, Chelyabinsk, Russia, pp. 19-26, 1982. [in Russian]
401. A. Kulik, O. Kazmin, and Y. Shtessel, "De-coupling of Processes of Pulse Power Consumption in Autonomous Systems of Electric Power Supply," *Proceedings of the All-Soviet Union Seminar on CAD of Electric Devices in Autonomous Electric Power Engineering*, Vol. 2, Chelyabinsk, Russia, pp. 65-71, 1981. [in Russian]
402. A. Kulik, O. Kazmin, and Y. Shtessel, "De-coupling Design Algorithm of Autonomous Systems of Electric Power Supply," *Proceedings of the All-Soviet Union Seminar on CAD of Electric Devices in Autonomous Electric Power Engineering*, Chelyabinsk, Russia, pp. 5-7, 1981. [in Russian]
403. M. Borisuk, O. Kazmin and Y. Shtessel, "Multi Criteria Optimal Design of Autonomous Systems of Electric Power Supply," *Proceedings of the All-Soviet Union Seminar on Methods of System Analysis in Autonomous Electric Power Engineering*, Chelyabinsk, Russia, pp. 37-45, 1978. [in Russian]

V. Papers and abstracts published in proceedings from scholarly meetings

404. S. Kode and Y. Shtessel, "Resource Prospector Lander Control Design Using Sliding Mode Control Toolbox," *Proceedings of the SSST*, 2021.
405. D. Foreman, Y. Shtessel, and C. Tournes "Integrated Missile Flight Control using Quaternions and Third-Order Sliding Mode Control," *Proceedings of The Huntsville Simulation Conference HSC 2009*, October 2009.
406. S. Baev, Y. Shtessel, and M. Sheffield, "Sliding Mode Control of a Unity Power Factor 3-phase AC/DC boost converter," *Proceedings of SoutheastCon*, Huntsville, AL, April 2-6, 2008, pp. 491-496.
407. P. Kaveh, and Y. B. Shtessel, "Blood Glucose Regulation in Diabetics Using Sliding Mode Control Techniques," *Proceedings of the 38th SSST*, 2006.
408. P. Kaveh, A. Ashrafi and Y. Shtessel, "Robust Sliding Mode Harmonic Oscillator Suitable for Low Frequencies," *Proceedings of the 37th SSST*, 2005.
409. Y. Shtessel, J. Zhu and D. Daniels, "Reusable Launch Vehicle Attitude Control Using a Time-Varying Sliding Mode Control Technique," *Proceedings of the 34th SSST*, Huntsville, AL, pp. 81-85, 2002.
410. J. Zhu, D. Laurence, J. Fisher and Y. Shtessel, "Direct Fault Tolerant RLV Attitude Control- A Singular Perturbation Approach," *Proceedings of the 34th SSST*, Huntsville, AL, pp. 86-91, 2002.
411. Y. Shtessel and I. Shkolnikov, "Nonminimum Phase Tracking on Sliding Modes," *Proceedings of the XXII Congresso Internacional de Ingenieria Electronica*, Chihuahua Mexico, pp. 221-226, October 23-27, 2000.
412. I. Shkolnikov, Y. Shtessel, "On one Approach to Nonminimum Phase Tracking in Flight Control System in Sliding Mode," *Proceedings of the Southeastern Simulation Conference*, Huntsville, AL, pp. 156-161, 1999.

413. Y. Shtessel, M. Brown, R. Toomey, K. Moore, and K. Cook, "Sliding Mode Controller Design for Kinetic Energy Kill Vehicles," *Proceedings of the 7th Annual AIAA/BMDO Technology Readiness Conference and Exhibit*, Fort Carson, Colorado Springs, CO, August 3-7, 1998.
414. E. Doscocz, Y. Shtessel, and K. Katsinis, "MIMO Sliding Mode Control of a Robotic "Pick and Place" System Modeled as an Inverted Pendulum on a Moving Cart" *Proceedings of the 30th SSST*, pp. 379-383, 1998.
415. P. Wang, Y. B. Shtessel and Y. Wang, "Satellite Attitude Control Using Only Magnetorquers," *Proceedings of the 30th SSST*, pp. 500-504, 1998.
416. Y. Shtessel and D. Krupp, "Sliding Mode Control of Reusable Launch Vehicle in Launch and Re-entry Modes," *Proceedings of the 29th SSST*, Cookeville, TN, March 9-11, 1997.
417. J. H. MsDuffie and Y. B. Shtessel, "Microsatellite Attitude Control on Sliding Modes," *Proceedings of the 29th SSST*, Cookeville, TN, March 9-11, pp. 92-97, 1997.
418. B. Peltsverger and Y. Shtessel, "Optimal Estimation of Interconnections of Nonlinear Interconnected Subsystems," *Proceedings of the 29th SSST*, Cookeville, TN, March 9-11, 1997.
419. Y. J. Lee and Y. Shtessel, "Comparison of a Feedback Linearization Controller and Sliding Mode Controllers for a Permanent Magnet Stepper Motor," *Proceedings of the 28th SSST*, Baton-Rouge, LO, March 31-April 2, pp. 258-262, 1996.
420. Y. Shtessel, "Dynamic Sliding Mode Control Strategy in Systems of Inertial Navigation", *The Third SIAM Conference on Control and Its Applications*, April 27-29, St. Louis, MO, p. A37, 1995.
421. Y. Shtessel and F. Wyant, "Sliding Mode Control Following of a Reference Electric Power Profile in the Space Nuclear Reactor TOPAZ II", *The Third SIAM Conference on Control and Its Applications*, April 27-29, St. Louis, MO, A41, 1995.
422. Y. Shtessel and C. Tournes, "Decentralized Sliding Mode Control in Integrated Flight Control Problem", *The Third SIAM Conference on Control and Its Applications*, April 27-29, St. Louis, MO, p. A42, 1995.
423. Y. Shtessel and M. Jackson, "Sliding Mode Thermal Control System for Space Station Furnace Facility", *Proceedings of the 27th SSST*, Starkville, Mississippi, March 12-14, pp. 164-168, 1995.
424. Y. Shtessel and C. Tournes, "Integrated Flight Control Problem on Decentralized Sliding Modes", *Proceedings of the 27th SSST*, Starkville, Mississippi, March 12-14, pp. 487-491, 1995.
425. Y. Shtessel, "Nonlinear Tracking Problem Solution Via Nonlinear Sliding Manifolds", *SIAM Annual Meeting*, July 25-29, San Diego, p. A40, 1994.
426. Y. Shtessel, "Sliding Mode Stabilization of Three-Axis Inertial Platforms", *Proceedings of the 26th SSST*, March 20-22, Ohio University, Athens, OH, pp. 54-58, 1994.
427. Y. Shtessel, "Invariant Optimal Control in Linear Dynamic Systems," *Proceedings of the 25th SSST*, March 7-9, The University of Alabama, Tuscaloosa, AL, pp. 328-331, 1993.
428. Y. Shtessel and B. Pelzwerger, "Multi Criteria Optimization in Multi Connected Systems of Automatic Control," *Proceedings of the IEEE Southeastcon*, Birmingham, AL, pp. 795-798, 1992.
429. A. Bordetsky and Y. Shtessel, "Multiple Criteria Approach to Cooperative Rescheduling," *Proceedings of the ORSA/TIMS National Meeting*, San Francisco, pp. 100-105, 1992.
430. Y. Shtessel, "Sliding Modes: Tracking Problem in Nonlinear Dynamic Systems," *The First SIAM Conference on Control and Its Applications*, Minneapolis, MN, 1992.
431. Y. Shtessel and A. Evnin, "Tracking Problem Solution in Nonlinear Dynamic Systems Based on Sliding Modes," *Proceedings of the 24th SSST/CSA*, Greensboro, NC, pp. 543-546, 1992.

432. Y. Shtessel and A. Evnin, "Synthesis of Invariant Local Sliding Modes in Nonlinear Multi Connected Systems," *Proceedings of the Conference on Control in Multi Connected Systems*, Moscow, Russia, p. 32, 1990. [in Russian]
433. A. Evnin and Y. Shtessel, "Solution of Equations of System Center in a Sliding Mode Control Problem," *Proceedings of the Khazakh Republic Conference on Problems of Numerical Mathematics and Automatization of Scientific Research*, Alma-Ata, Khazakhstan, p.114, 1988. [in Russian]
434. Y. Shtessel and A. Evnin, "Two-Level Invariant Control Design in Nonlinear Robots," *Proceedings of the All-Soviet Union Seminar on Robots and Flexible Industrial Systems*, Moscow, Russia, p. 21, 1988. [in Russian]
435. L. Ozerov, O. Raznopolov, Y. Shtessel, and A. Evnin, "Simulation of Sliding Modes in Autonomous Systems of Electric Power Supply," *Proceedings of the All-Soviet Union Conference on Simulation of Electrical Systems*, Riga, Latvia, pp. 117-118, 1987. [in Russian]
436. Y. Shtessel, A. Kulik, L. Ozerov, O. Raznopolov and A. Evnin, "Decentralized Sliding Mode Control in Multi Connected Systems," *Proceedings of the 10th All-Soviet Union Meeting-seminar on Control in Hierarchical Active Systems*, Tbilisy, Republic of Georgia, p. 103, 1986. [in Russian]
437. O. Kazmin, B. Yakovlev, V. Efimov and Y. Shtessel, "Some Results of Numerical – Analog – Natural Modeling," *Proceedings of the All-Soviet Union Seminar on Applications and Development of Semi – Natural Modeling in Electric Power Engineering*, Irkutsk, Russia, pp. 37-41, 1979. [in Russian]
438. O. Kazmin and Y. Shtessel, "Design of Electronic Control Algorithms in Technical Basis," *Proceedings of the Beloruss Republic Conference on Technical Improvement of Design Algorithms, Production and Implementation of Radio Techniques, Electronic and Communication Tools*, Minsk, Beloruss Republic, pp. 79-80, 1979. [in Russian]
439. O. Karetny, Y. Shtessel, and B. Yakovlev, "Two-Criteria Optimization Chart," *Proceedings of the Ukraine Republic Conference on Applications of CAD to Chemical Industry*, Kiev, Ukraine, pp. 10-13, 1976. [in Ukrainian]
440. Y. Shtessel and B. Yakovlev, "Minimization of Consumption of Electrical Energy by Control Systems in Transient Processes," *Proceedings of the Regional Conference on Computer Aided Design Applications to Automatic Control of Industrial Processes*, Perm, Russia, pp. 8-9, 1971. [in Russian]

VI. Student's Manuals

441. A. Komirev, B. Pelzwerger, and Y. Shtessel, *Modern and Optimal Control in Dynamic Systems. Student's manual for the design project*, South Ural State University, Chelyabinsk, Russia, 25 p., 1989. [in Russian]
442. R. Verkhogliad, N. Komar, and Y. Shtessel, *Numerical Methods for Computer Programming. Student's manual*, Vol. 2, South Ural State University, Chelyabinsk, Russia, 54 p. 1988. [in Russian]
443. R. Verkhogliad, N. Komar, and Y. Shtessel, *Numerical Methods for Computer Programming, Student's manual*, Vol. 1, South Ural State University, Chelyabinsk, Russia, 84 p., 1988. [in Russian]
444. R. Verkhogliad, and Y. Shtessel, *Computer Methods in Engineering. Student's manual for the laboratory practice*, South Ural State University, Chelyabinsk, Russia, 39 p., 1984. [in Russian]

445. R. Verkhogliad, and Y. Shtessel, *Computer Methods in Engineering. Student's manual for FORTRAN-programming*, South Ural State University, Chelyabinsk, Russia, 83 p., 1984. [in Russian]
446. L. Kazarinov, Y. Shtessel, and B. Yakovlev, *Design of Automatic and Remote Control Systems. Student's manual*, Vol. 3, South Ural State University, Chelyabinsk, Russia, 91 p., 1980. [in Russian]

VII. Patents

447. M.A.E. Alali, Y. Shtessel, and J-P. Barbot, "Optimal energy management of smart grids: active photovoltaic compensator of smart energy-plus buildings, EP Patent PCT 067779, 2019.
448. C. Tournes and Y. Shtessel, "System and Method for Guiding and Controlling a Missile Using High Order Sliding Mode Control," *Patent of USA*: # 12/501,395, May 7, 2013.
449. L. Ozerov, O. Raznopolov, and Y. Shtessel, "Controller for the Multi-Channel System of Electric Power Supply," *Author's Certificate of Invention in the USSR*, No. 1624428 (SU 1624428 A1), October 1, 1990. [in Russian]
450. L. Ozerov, O. Raznopolov, Terentjev, N. E., and Y. Shtessel, "Pulse Stabilizer of DC Voltage", *Author's Certificate of Invention in the USSR*, No. 1571561 (SU 1571561 A1), February 15, 1990. [in Russian]
451. A. Kulik, L. Ozerov, O. Raznopolov, and Y. Shtessel, "Relay Stabilizer of DC Voltage", *Author's Certificate of Invention in the USSR*, No. 1529196 (SU 1529196 A1), August 15, 1989. [in Russian]
452. A. Velin, V. Konstantinov, O. Konstantinova, A. Kulik, L. Ozerov, A. Iamshikov, and Y. Shtessel, "Device for Measurement of Internal Resistance of Chemical Source of Current, *Author's Certificate of Invention in the USSR*, No. 1098052 (SU 1098052 A), February 15, 1984. [in Russian]

INSTITUTIONAL SERVICE

Committee	Level	Years	Role
Faculty senate	UAH	2016-2018	Member
Faculty Appeals Committee	College of Engineering	2007-2008	Member, Consider appeals of faculty of College of Engineering
Promotion and Tenure Advisory Committee	College of Engineering	2003-2005, 2012-2017	Member. Considered applications of faculty of College of Engineering for tenure and promotion
Signals and Systems	ECE Department	1993-2019	Member and Chair. Provide leadership in the Signals and Systems Program curriculum development
EE Program Undergraduate/Graduate Affairs	ECE Department	1999-2019t	Member. Participate in undergraduate graduate program curriculum development
Graduate Affairs	ECE Department	1993-1997,	Member/Chair Participated in graduate program curriculum development

		2015-2019	
Faculty search committee	ECE Department	2018-2019	Chair
Research Affairs	College of Engineering	1994-1997	Member. Participated in developing perspective research directions
University Senate Governance Committee	University	1996-1997	Member. Participated in reviewing and updating the documents regulating the university faculty duties.
Undergraduate Affairs	ECE Department	1997-1999	Member and Chair. Provided leadership in developing mixed Electrical Engineering/Computer Engineering and Electrical Engineering/Optical Engineering programs curricula.
Space and Facilities	College of Engineering	1997-1998	Member. Participated in inspecting facilities and space available and developing recommendations for improvement
Shop	College of Engineering	1998-1999	Chair. Provided leadership in inspecting the College Shops and developing recommendations for improvement

TEACHING

COURSES TAUGHT

Remark. Courses, which were taught in The University of South Carolina, Columbia, SC [USC] and the South Ural State University, Chelyabinsk, Russia [RUS], are given catalog numbers of similar courses offered in UAH.

EE-722	<i>Sliding Mode Control: Theory and Applications</i> [UAH, graduate]
EE-704	<i>Nonlinear Control Systems</i> [UAH, graduate]
EE-701	<i>Advanced Linear Control Theory</i> [UAH, graduate]
EE-629	<i>Analytical & Computational Methods in Electrical Engineering</i> [UAH, graduate]
EE-607	<i>Robotic Systems Control</i> [UAH, graduate]
EE-605	<i>Classical Controller Design</i> [UAH, graduate]
EE-486/586	<i>Introduction to Modern Control Systems</i> [UAH, graduate/undergraduate] [#]
EE-386	<i>Introduction to Control and Robotic Systems</i> [UAH, undergraduate]
EE-425/505	<i>Introduction to Control and Robotic Systems</i> [UAH, undergraduate/graduate]
EE-494	<i>Digital Signal Processing Senior Design Project</i> [UAH, undergraduate]
EE-382	<i>Analytical Methods for Continuous Time Systems</i> [UAH, undergraduate]
EE-213/300	<i>Electrical Circuits I</i> [UAH, undergraduate]
EE-202	<i>Introduction to Digital Logic Design</i> [USC, undergraduate]
MA-324	<i>Introduction to Differential Equations</i> [USC, undergraduate]

MA-105	<i>College Algebra</i> [USC, undergraduate]
EE-705	<i>Theory of Optimal Control</i> [RUS, graduate]
ISE-626	<i>Introduction to Operation Research</i> [RUS, graduate]
CPE-112	<i>Introduction to Computer Programming in Engineering</i> [RUS, undergraduate]

CURRICULUM DEVELOPMENT

1. A new graduate course EE-722, “Sliding Mode Control” is developed. This course also was taught in the spring semesters of 1996-2005 academic years numbered as EE-710 “Selected Topics in Electrical Engineering”.
2. Provided leadership in “Remote Access Control and Dynamic System Laboratory” development. The laboratory development was supported by NSF grant “Virtual Control and Dynamic Systems Laboratory Development”, terms 01/10/00 – 01/09/03, The NSF award, \$52,901, was matched by the UAH funds.
PI: **Dr. Shtessel**, Co-Pi: Dr. Hampton, Dr. Johnson, Dr. Frederick, Mr. Middleton.

RECENT STUDENT ADVISEMENT

1. **The following graduate students completed the PhD programs at UAH:**

Name	Topic of Dissertation	Time of Graduation
Ilya A. Shkolnikov	Output Tracking in Causal Nonminimum Phase Nonlinear Systems in Sliding Modes	2001
Mark D. J. Brown	Continuous and Smooth Sliding Mode Control	2001
Donald R. Krupp, Jr.	Dynamic Sliding Manifold-based Control in Systems with Unmodeled Cascade Dynamics	2004
Dalton S. Nelson	Intelligent Control of Patient-Ventilator Synchrony	2007
Damien Galzi	Tight Air Vehicle Formation Control Using Higher Order Sliding Modes	2007
Parisa Kaveh	Blood Glucose Regulation Via Higher Order Sliding Mode Control	2007
Simon S. Baev	Output Feedback Tracking in Causal Nonminimum Phase Nonlinear Systems in Higher Order Sliding Modes	2008
James Stott	Classical and Higher Order Sliding Mode Control for Launch Vehicle Systems	2009
Jose Kochalummoottil	Adaptive second order sliding mode control	2012
Roshini Ashok	Control of Fuel Cell Electric Power Systems Using Sliding Mode Control & Observation Techniques	2015
Chandrasekhara Bharath Panathula	Certifiable Higher Order Sliding Mode Control: Practical Stability Margins Approach	2016
Fathi Aldukali	Hybrid Impulsive Higher Order Sliding Mode Control	2019

Shamila Nateghiboroujeni	Attack Reconstruction and Secure State Estimation in Cyber-Physical Systems Using Sliding Mode Observers	2020
Michael Cross	Missile Interceptor Integrated Guidance and Control: Single-loop Higher-order Sliding Mode Approach	2020
Mohammed Alfayizi	Quad-rotor Adaptive Sliding Mode Control Using Only Position and Yaw Sensors: Generalized Relative Degree Approach	2021
Sebastien Rouquet	Optimized energy management for series hybrid electric vehicles	2021
Sai Kode	Development of aerospace sliding mode control toolbox: relative degree approach with resource prospector lander and launch vehicle case studies	2022
R. J. Rajesh	Accuracy Improvement of Dynamic Sensors Measured Input Reconstruction Using Sliding Mode Observers	2022
Siddharth Das	Study of Stability Margins for a Class of Nonlinear Systems	2022
Mason Nixon	Adaptive Sliding Mode Control of Small Satellites in Formation for Distributed Beamforming Applications	2022

2. The following graduate students completed the MS programs with thesis at UAH:

Name	Thesis Title	Time of Graduation
Mark E. Jackson	Sliding Mode Thermal Control System for Space Station Furnace Facility	1995
Lee Joung-Ju	Performance Comparison of the Feedback Linearization Control and Sliding Mode Control for a Permanent Magnet Stepper Motor	1996
Christian H. Tournes	Aircraft Control in Sliding Modes	1996
James H. McDuffie	Sliding Mode Control of Spacecraft Attitude	1997
John Kevin O'Neal	A Comparison of Servomechanism Performance for Lead and Sliding Mode Controllers	1999
Richard F. Toomey	Advanced Interceptor Autopilot Design via Sliding Mode Control	2001
Sergey Plekhanov	Mixed Analog/Digital Signal Processing via Sliding Mode Control Technique	2003
Timothy Massey	Satellite Formation Control via Sliding Modes	2003
Charles Hall	Reusable Launch Vehicle Control Using Adaptive Sliding Mode Disturbance Observers	2004
Parisa Kaveh	Harmonic Oscillator Control using Traditional and High Order Sliding Modes	2004
James Stott	Reusable Launch Vehicle Control in Time-Varying Sliding Modes	2005
Manoj Yegnaraman	Micro-cantilever Sensors Using Second Order Sliding	2005

	Mode Control	
Michael Lawler	System Identification of the Longitudinal/Heave Dynamics for a Tandem-Rotor Helicopter Including Higher-Order Dynamics	2006
Lenaick Besnard	Quad-rotor Vehicle Control Using Sliding Mode Disturbance Observers	2006
Bobby Joe Patterson	Sliding Mode Tracking Control of Output Voltage in Multiple Modular DC-to-DC Boost Power Converters	2007
Jay Gundavelli	Parameter Identification of Dynamic Systems Using Traditional and Higher Order Sliding Mode Control	2008
Jeb Orr	Control of Lunar Spacecraft Power Descent Using Higher Order Sliding Modes	2009
Maryem Sheffield	Power Factor Correction in 3-phase AC-DC converter with Vienna Power Unit Using Sliding Mode Control	2009
Brent Deason	Buck Converter with Insulating Transformer Control Using Feedback Linearization and Averaging Control Techniques	2009
Robert Schaeffel	Power Factor Control of a 3-Phase AC/DC Boost Converter Using Nonlinear Control Techniques	2009
Susan Holleran	Reconfiguration of a Mobile Communication Network via Higher-Order Sliding Mode Control	2010
Nathan Brown	Air-to-Ground Missile Sliding Mode Guidance	2010
Elise Goff	DSP Implementation and Study of Sliding Mode Control Algorithms for Power Factor Correction in AC-DC Converters	2011
Roshini Ashok	Adaptive Sliding Mode Control for Energy Management of DC Power Using Fuel Cells and Ultracapacitors	2012
Tetsuya Toyama	Robotic Manipulator Control using Adaptive Sliding Modes	2012
Arthur Palosz	Higher Order Sliding Mode Control Of Laser Pointing For Orbital Debris Mitigation	2013
Polk Yu	Hyper Sonic Missile Control In Terminal Mode Using Continuous Higher Order Sliding Mode Control Driven By Disturbance Observer	2014
Steve Mays	Controlling A Boost DC/DC Converter For Led Array Using Super Twisting Feedback Algorithm	2014
Akshay Kulkarni	Twisting Algorithm for Controlling F-16 Aircraft with Performance Margins Identification	2014
Jason Cole	Hypersonic Missile Control in Terminal Mode Using Higher Order Quasi-Continuous Sliding Mode Control and Observation Techniques	2014
Micah Harvey	A Comparative Study of Sliding Mode Control Algorithms Implemented on a 2-DOF Planar Robot	2015
Svetlana Green	Impulsive Control For the Short Time Convergence of the Second Order System	2015

Stephen Phillips	Terminal Phase Control of a 6-DOF Hypersonic Vehicle Using Sliding Mode Control Techniques	2015
B. Chava	Second Order Sliding Mode Control Using Nonlinear Dynamic Sliding Manifold: a Lyapunov Approach	2015
Siddharth Das	Phase and Gain margins for a Class of Nonlinear Systems	2018

More than 60 journal papers and over 250 conference papers have been published in co-authorship with graduate students.