



## Yuri Shtessel

Professor

Department of Electrical & Computer  
Engineering



Dr. Yuri Shtessel received the M.S. and Ph.D. degrees in Electrical Engineering with concentration in Automatic Control from the Chelyabinsk State Technical University, Chelyabinsk, Russia in 1971 and 1978, respectively. Since 1993, he has been with the Electrical and Computer Engineering Department, The University of Alabama in Huntsville, where his present position is Professor. His research interests include sliding mode control and observation with applications to aerospace vehicle control, propulsion control, and electric power system control.

His main contribution to the area of sliding mode control and observation is mostly in nonminimum phase output tracking, and adaptive higher order sliding modes. He also proposed higher order sliding mode guidance, and autopilot for hit-to-kill missile interceptors. His current applied research is on scram jet propelled hypersonic missile guidance and control using higher order sliding modes.

He published more than 300 technical papers. He is member of Editorial Board of Journal of Franklin Institute. Dr. Shtessel is a recipient of the IEEE Third Millennium Medal for the outstanding contributions to control systems engineering, 2000. He holds the ranks of Associate Fellow of AIAA and Senior Member of IEEE.

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### RELEVANT PUBLICATIONS:

1. Y. Shtessel, C. Edwards, L. Fridman, and A. Levant, *Sliding Mode Control and Observation*, Birkhauser, Springer, New York, 371 pages, 2013.
2. 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, 2013, pp. 679-688.
3. 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, 2013, pp. 97-113.
4. 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.
5. 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, 2012, pp. 397-412.
6. 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, 2012, pp. 217-224.
7. Y. Shtessel, M. Taleb, and F. Plestan, "A novel adaptive-gain super-twisting sliding mode controller: methodology and application," *Automatica*, Vol. 48, Issue 5, 2012, pp. 759-769.
8. 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, 2012, pp. 658-684.
9. 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.
10. 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.
11. 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.
12. 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.