

Dr. Martin Stephan Heimbeck

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UAH Affiliation: Part time lecturer

Courses taught:

PH 101 General Physics I

PH 102 General Physics II

PH/OSE 541 Geometrical Optics

PH/OSE 542 Physical Optics

Current Organization

United States Army: Engineer / Subject Matter Expert

Combat Capabilities Development Command, Aviation and Missile Center
Redstone Arsenal, AL 35898

Previous Organizations

United States Army: Physicist

Space and Missile Defense Command, Technical Center
Redstone Arsenal, AL 35898

United States Army: Research Scientist

Research Development and Engineering Command, Aviation Missile Research
Development and Engineering Center
Redstone Arsenal, AL 35898

The Aegis Technologies Group, Inc.: Research Scientist

Huntsville, AL 35806

Education, Affiliation, Awards

PhD: Optical Science and Engineering, 2016

M.S: Physics, 2008

School: University of Alabama in Huntsville.

PhD Dissertation Title: Digital Holography and Coherent Imaging at Terahertz Frequencies.

Notable Awards:

- Recipient of the Presidential Early Career Award for Scientists and Engineers (PECASE)
- Achievement Medal for Civilian Service.

Professional Publications

“Terahertz digital holographic imaging”, MS Heimbeck and HO Everitt, OSA Advances in Optics and Photonics **12** 1-59, 2020.

“Strain sensing with metamaterial composites”, HO Everitt, T Tyler, BD Caraway, A Llopis, MS Heimbeck, WJ Padilla, DR Smith, NM Jokerst, Advanced Optical Materials, **7**, 2019.

“Cyclotron resonance in the high mobility GaAs/AlGaAs 2D electron system over the microwave, mm-wave, and terahertz-bands” A. Kriisa, RL Samaraweera, MS Heimbeck, et.al, Scientific Reports **9**, 1-10, 2019

“Linear and nonlinear optics of switchable terahertz metasurfaces”, N Karl, GR Keiser, MS Heimbeck, HO Everitt, HT Chen, AJ Taylor, I Brener, et. al, Optical Sensors, SeW3J. 2, 2018.

“Narrowband Metamaterial Absorber for Terahertz Secure Labeling”, M Nasr, JT Richard, SA Skirlo, MS Heimbeck, JD Joannopoulos, et.al, Journal of Infrared, Millimeter, and Terahertz Waves **38** (9), 1120-1129, 2017.

“Terahertz transparent electrode using tripod metal aperture array” Abubaker M. Tareki, Robert Lindquist, Wonkyu Kim, Martin S. Heimbeck, and Jungpend Guo, IEEE Transactions on Terahertz Science and Technology, 2017.

“Characterization of switchable terahertz metasurfaces”, N. Karl, Martin S. Heimbeck, Henry O. Everitt, et.al, IEEE IRMMW-THz 41th International Conference on, 2016.

“Digital Holography and Coherent Imaging at Terahertz Frequencies” Martin S. Heimbeck, University of Alabama in Huntsville, 2016.

“Carbon nanotube fiber terahertz polarizer” Ahmed Zubair, Dmitri E. Tsentelovich, C.C. Young, Martin S. Heimbeck, Applied Physics Letters, 2016.

“Tunable Amplitude and Phase Modulation in Terahertz Regime Using Transverse Stratified Configuration,” Daniel L. Forti, Robert G. Lindquist, and Martin S. Heimbeck, Progress in Electromagnetic Research, 2015.

“Terahertz Digital Holographic Imaging of Voids Within Visibly Opaque Dielectrics,” Martin S. Heimbeck, Wei-Ren Ng, Dathon R. Golish, Michael E. Gehm, and Henry O. Everitt, IEEE Transactions on Terahertz Science and Technology, 2015.

“Terahertz Digital Holographic Imaging of Visibly Opaque Printed Dielectrics,” Martin S. Heimbeck, Wei-Ren Ng, Dathon R. Golish, Michael E. Gehm, and Henry O. Everitt, IRMMW-THz, 2014.

“Substrate Free G-Band Vivaldi Antenna Array Design, Fabrication, and Testessive sampling of sparse scenes,” Anatoliy Boryssenko, Jennifer Arroyo, Rob Reid, Martin S. Heimbeck, IRMMW-THz, 2014.

“Polarization controllable THz stereometamaterial absorber,” M.K. Hokmabadi, Martin S. Heimbeck, et al. IRMMW-THz, 2014.

“Adaptive millimeter-wave synthetic aperture imaging for compressive sampling of sparse scenes,” Alex Mrozack, Martin S. Heimbeck, Daniel L. Marks et al., Optics Express, 2014.

“Compressive and Adaptive Millimeter-wave SAR,” Alex Mrozack, Martin S. Heimbeck, Daniel L. Marks, Jonathan Richard, Henry O. Everitt, and David J. Brady, arXiv 1402.1466, 2014.

“Adaptive Scanning for Synthetic Aperture Images,” Alex Mrozack, Martin S. Heimbeck, Dan Marks, et al., Frontiers in Optics, 2013.

“Polarization Sensitive Terahertz Digital Holography,” Martin S. Heimbeck, Henry O. Everitt, Frontiers in Optics, 2012.

“Coherent Terahertz Holographic and Tomographic Imaging,” Henry O. Everitt, Martin S. Heimbeck, Dan Marks et al. Optical Sensors, 2012.

“Design, Simulation, and Characterization of THz Metamaterial Absorber,” Lee

Butler, David S. Wilbert, William Baughman et al., Proc. SPIE 8363 Terahertz Physics, Devices, and Systems VI, 83630J, 2012.

“Terahertz Interferometric Synthetic Aperture Tomography for Confocal Imaging Systems,” Martin S. Heimbeck, Dan L. Marks, David Brady et al., Optics Letters 37, 1316-1318, 2012.

“Terahertz Digital Holography Using Angular Spectrum and Dual Wavelength Reconstruction Methods,” Martin S. Heimbeck, Myung K. Kim, Don A. Gregory et al., Optics Express 19, 9192-9200, 2011.

“Terahertz Digital Off-axis Holography for Non-destructive testing,” Martin S. Heimbeck, Dennis Wilson, Amy Frees, et al., IEEE IRMMW-THz 36th International Conference on, 2011.

“Multi detector terahertz beam profiling and imaging instrument,” Martin S. Heimbeck, Patrick J. Reardon, Joshua Goldberg et al., IEEE IRMMW-THz 36th International Conference on , 2011.

“Continuous Wave Terahertz Transmission Imaging Through Near-Field Aperture Funnels,” Martin S. Heimbeck, Dennis Wilson, Amy Frees, et al., IEEE IRMMW-THz 36th International Conference on, 2011.

“Transmissive Quasi-Optical Ronchi Phase Grating for Terahertz Frequencies,” Martin S. Heimbeck, Patrick J. Reardon, John Callahan et al., Optics Letters 35, 3658-3660, 2010.

“Instrumentation for Beam Profiling in the Terahertz Regime,” Martin S. Heimbeck, Henry O. Everitt, Kent Taylor, et al. SPIE Defense, Security, and Sensing, 76710J-76710J-12, 2010.

“Imaging Techniques in the Terahertz Spectral Region: A Thesis,” Martin S. Heimbeck, Thesis, University of Alabama in Huntsville, 2008.