Curriculum Vitae (Abbreviated)

Thomas J. Meitzler, Ph.D.
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Thomas Meitzler received a B.S. and M.S. in Physics from Eastern Michigan University, completed advanced graduate coursework at the University of Michigan, and received a Ph.D. in Electrical Engineering from Wayne State University in Detroit. He is a Fellow of the American Physical Society (APS), a Life Senior Member of the Institute for Electrical and Electronics Engineers (IEEE) and Society of Photo-optical Instrumentation Engineers (SPIE).

Dr. Meitzler has been an adjunct at U of M-Dearborn. For 32 years, he was a Senior Technical Expert at the US Army Ground Vehicle Systems Command (GVSC) in the Ground System Survivability and Protection (GVSP) department. Dr. Meitzler was involved with the validation, verification, and development of infrared, electro-optical and human visual acquisition models. He was the principal scientist of the GVSC Visual Perception Laboratory and the principal investigator on research efforts with General Motors and Ford Motor Company to apply visual target acquisition models to automotive vehicle conspicuity and novel sensors to provide automobile 360-degree safety. He was the lead investigator on several Space Act Agreements with NASA's Kennedy Space Center concerning remote ice detection and CRADA's with the Columbia University College of Physicians and Surgeons involving the use of functional MRI (fMRI) for augmentation to visual detection experiments. He has authored/co-authored many papers in the area of optical system simulation, visual detection, nondestructive armor testing and piezoelectric nondestructive testing of armor materials, spintronics and has patents in those areas. He has developed and integrated technologies for embedded armor health-monitoring, armor non-destructive testing, and armor embedded, radio signal detection.

Previous Position: US Army DEVCOM Chief Science Advisor - Ground Systems Survivability and Protection (GSV&P), Lead of the Sensor Enhanced Armor and Nondestructive Evaluation. Interests are in ultrasonic, millimeter wave, and X-ray NDE of armor, sensor fusion, piezoelectric transducers, real-time NDE and health monitoring, Spintronics and embedded sensors and detectors, infrared sensor and visual detection modeling.

Cleared for Top Secret information and access to Sensitive Compartmental Information based on Single Scope Background Investigations,

American Physical Society Fellow, IEEE & SPIE Senior Member

Education:

1995 Wayne State University, Detroit, MI, Ph.D. in Electrical and Computer Engineering,
Bulk of Ph.D. course work done in advanced physics.
Thesis Title: Modern Approaches to the Computation of the Probability of Target Detection in Cluttered Environments

1983 Eastern Michigan University Ypsilanti, MI, M.S., Physics
Transfer courses from the University of Michigan.

1982 University of Michigan Rackham Graduate School Ann Arbor, MI

1978 Eastern Michigan University, Ypsilanti, MI, B.S., Physics

1974 University of Michigan-Dearborn Dearborn, MI, undergraduate study

Employment:

1989-2022 US Army DEVCOM Ground Vehicle Systems Center, Warren, MI, Research Physicist/Electrical Engineer – Survivability Senior Technical Expert, Sensor Enhanced Armor-Nondestructive Evaluation laboratory technical lead and director, camouflage and electro-optical performance assessment, image fusion, armor NDE, spintronics, embedded sensors and multifunctional armor, vehicle detection modeling and experimentation.

1986-1989 Univ. of Michigan-Dearborn, Dearborn MI
Adjunct lecturer in the Physics and ECE dept.'s. Taught control theory, introductory Physics labs and Astronomy.

1986-1989 Henry Ford C.C., Dearborn, MI
Adjunct lecturer in the Physics and EE dept.'s.

1983-1988 Wayne State University, Detroit, MI
Teaching/Research assist. in the Physics and Medical Physics dept.'s.

1982-1983 Eastern Michigan University, Ypsilanti, MI
Graduate teaching assist. in the Physics dept.

1981-1982 Environmental Research Institute of Michigan (ERIM) Ann Arbor, MI.

Over 200 technical papers and presentations including Wiley Encyclopedia of Electrical and Electronics Engineering chapters.

5 US patents and many US Army Research and Development awards

Selected Favorable Citations of Work/Awards:
1.) NATO SET Panel Excellence Award for an excellent contribution to the task group on Metamaterials for Defense and Security Applications – Nov., 2016.
2.) Elected as Fellow in the American Physics Society, Forum of Industrial and Applied Physics, Oct. 2015
3.) Dr. Meitzler was a winner of the 2013 US Army R&D Achievement Award for "Spintronic Radar Detectors for Multifunctional Armor." This is the third such award for innovation in research he has received and the only instance of such an award at TARDEC for three consecutive times.
4.) Dr. Meitzler was a winner of the 2009 US Army R&D Achievement Award for developing the sensor enhanced armor: a new technique for evaluating armor health. Dr. Meitzler and his team received this award for developing a technique to determine armor health using embedded ultrasonic transducers and algorithms to process the data from the embedded transducers.
5). Dr. Meitzler received a NASA team award for developing and calibrating prototype technology for detecting ice on the Space Shuttle External Tank on the launch pad in July 2007.
6.) Requested in 2007 by Wiley Encyclopedia of Electrical and Electronics Engineering to update his co-authored article on Infrared Imaging.
7.) In 2007, Dr. Meitzler received an official letter of appreciation from the director of NASA Kennedy Space Center for his efforts and that of his team, in developing a solution to ice detection need that has existed since the start of the shuttle program.
8.) Nomination for DOD Civilian Distinguished Service Award, July, 2004.
9.) Interview of Dr. Meitzler on the use of the Visual Perception Lab for camouflage assessment on the History channel's special series on Stealth Technology as applied to Ground Vehicles, July, 2004.
10.) Dr. Meitzler was a winner of the 1995 US Army R&D Achievement Award. This award is a highly prestigious Army award given in recognition of outstanding research that has resulted in improved U.S. Army capabilities and contributed to the nation's welfare. Dr. Meitzler, along with Dr. Gerhart and Mrs. Sohn, received this award for research and development of target acquisition models and sensors for dual use applications.

Professional Society Membership (Past and present):

American Physical Society (APS) – Fellow of Industrial and Applied Physics
Institute of Electrical and Electronic Engineers (IEEE) - Senior Member
Society of Photo-Optical Instrumentation Engineers (SPIE) – Senior Member

Some Recent Publications:

217.) Meitzler, T., Bankowski, E., Krivorotov, I., Slavin, A., Ultra-Fast And Radiation Hard Detectors of Microwave Signals Based on Arrays of Spintronic Diodes And Used For Protection of Ground Combat Vehicles, July. 2022, Part 1. ad1172806.

216.) Nurge, M., Youngquist, R., Meitzler, T., "Deceleration of Projectiles Using Magnetic Fields (Update)", DTIC 2021.

215.) Artemchuk, P., Zhang, J., Oleksandr V, Prokopenko, V., Bankowski, E., Meitzler, T., Krivorotov, I., Katine, J., Tiberkevich, V., Slavin, A., Measurement of Microwave Signal Frequency by a Pair of

Spin-Torque Microwave Detectors", IEEE Magnetics Lttrs., Online ISSN: 1949-3088 Digital Object Identifier: 10.1109/LMAG.2021.3088400
2021.

214.) Kamthan, S., Singh, H., and Meitzler, T., "Hierarchical Fuzzy Logic and Application to Survivability," in review, Transactions on Aerospace and Electronic Systems. 9 March 2021, DTIC accession number AD1124435.

213.) Yu, P., Artemchuk, Prokopenko, O., Bankowski, E., Meitzler, T., Tyberkevych, V., and Slavin, A., "RF signal detector and energy harvester based on a spin-torque diode with perpendicular magnetic anisotropy," AIP Advances, Jan 2021

212.) Meitzler, T., Richardson, P., "Adaptive and Cooperative Protection Concepts and Associated Technical Challenges and Workarounds," Aug. 2020, AD1106214.

211.) Youngquist, R., Nurge, M., Meitzler, T., and Lada, R., "Deceleration of Projectiles Using Magnetic Fields, June 2020, DTIC accession number is AD1100776.

210.) Bankowski, E., Meitzler, T., "Radio Frequency Signal Detection And Energy Harvesting With A Spin Torque Diode Having Perpendicular Magnetic Anisotropy Of The Free Layer," May 2020, DTIC Accession number is AD1099504.

209.) Artemchuk, P. Yu, Sulymenko, O.R., Louis, S., Li, J., Khymyn, Bankowski, E., Meitzler, T., Tyberkevych, V., Slavin, A. and Prokopenko, O., "Terahertz frequency spectrum analysis with a nanoscale antiferromagnetic tunnel junction," J. Appl. Phys., 127, 063905 (2020); doi: 10.1063/1.5140552, 2020, DTIC accession number is AD1083703

208.) Meitzler, T., Bankowski, E., Krivorotov, I., Slavin, A., "Report on a 2018 STTR: Spectrum Analyzer Using Spintronic Radar Arrays", DTIC accession number AD1075255, 21 June 2019.

207.) Meitzler, T., Wong, I., Bryk, D., Strabryla, T., "Evaluation Of Sensors For Ballistic Measurement", J. of DoD Research and Engineering, Aug 2019.

206.) Louis, S., Sulymenko, O., Tiberkevich, V., Li, J., Aloi, D., Prokopenko, O., Krivorotov, I., Bankowski, E., Meitzler, T., Slavin, A., "Ultra-fast wide band spectrum analyzer based on a rapidly tune spin-torque nano-oscillator," Appl. Phys. Lettr. 113, Sept., 2018.

205.) Tyberkevych1, V., Prokopenko, O., Louis, S., Bankowski, E.,
Krivorotov, I., Meitzler, T., Slavin, A., "Nanoscale Energy Harvester of Ambient RF Signals," Pacific Operational Science and Technology (POST) Conference, Hawaii, March, 2018.

204). Louis, S., Lisenkov, I., Tyberkevych, V., Li, Jia, Khymyn, R., Bankowski, E., Meitzler, T., Krivorotov, I., and Slavin, A., "Low power microwave signal detection with a spin-torque nano-oscillator in the active self-oscillating regime", IEEE Transactions on Magnetics, Vol: 53 Issue11, Oct. 2017.

203). Bankowski, E., Meitzler, T., Slavin, A., and MacDougal, F., "Design of Conformal Ground Vehicle Antenna Based on a Magnetic Metamaterial Insulating Layer", TARDEC Innovative R&D report, July 2017.

202.) George, A., Singh, H., and Meitzler, T., "A Fuzzy Simulation Model for Military Vehicle Mobility Assessment," *Advances in Fuzzy Systems*, August, 2017.

201.) Kamthan, S., Singh, H., Meitzler, T., "UAV's: On Development of a Fuzzy Model for Categorization of Countermeasures during Threat Assessment," SPIE Unmanned Systems Technology XIX Conference, 1019518 (May 5, 2017); doi:10.1117/12.2275551.

200.) Louis, S., Lisenkov, I., Tyberkevych, V., Li, Jia, Khymyn, R., Bankowski, E., Meitzler, T., Krivorotov, I., and Slavin, A., "Low power microwave signal detection with a spin-torque nano-oscillator in the active self-oscillating regime", INTERMAG Conference, Dublin, Ireland, 2017.

199.) Verba, R., Bankowski, E., Meitzler, T., Tiberkevich, V., Slavin, A., "Nonreciprocal Spin Waves in a Magnonic Crystal with In-Plane Static Magnetization," SPIN, Vol. 6, No. 4 (2017), 1-7, 2 Feb., 2017.

198.) Bankowski, E., Meitzler, T., "Arrays of Spintronic Detectors for Radar Frequency Analysis," Ground Vehicle Survivability Training Symposium (GVSTS), 17 Nov., 2016.

197.) Meitzler, T., Bankowski, E., White, J., Environmental Testing of Pulse Power Capacitors for Electromagnetic Armor", Ground Vehicle Survivability Training Symposium (GVSTS), 17 Nov., 2016.

196). Meitzler, T., Bednarz, D., Sohn, E., "Fuzzy logic approach to image fusion for mine detection and homeland security" – Update to article on *Infrared Imaging*, Wiley Encyclopedia of Electrical and Electronics Engineering, Feb. 2017.

195.) Louis, S., Lisenkov, I., Tyberkevych, V., Li, J., Khymyn, R., Bankowski, E., Meitzler, T., Slavin, A., "Ultrafast Spectrum Analyzer Based on the Injection Locking of a Spin-Torque Nano-Oscillator", HC-08, Abstracts of the 61st MMM Conference, New Orleans, USA, 2016

194.) Meitzler, T., Bankowski, E., Louis, S., Lisenkov, I., Tyberkevych, V., Li, J., Khymyn, R., Krivorotov, I., Slavin, A., "Ultrafast Spectrum Analyzer Based on the Injection Locking of a Spin-Torque Nano Oscillator", IEEE Magnetism and Magnetic Materials Conference, 2016.

193.) Bankowski, E., Meitzler, T., Ho, J., White, H., "High voltage capacitors environmental testing," Proceedings of 2016 IEEE International Power Modulator and High Voltage Conference, San Francisco, CA, July 5-9, 2016, TIC REG #: 27881.

192.) Bankowski, E., Meitzler, T., Ho, J., White, J., Cooper, N., "High voltage capacitors environmental testing," Oral Presentation at 2016 IEEE International Power Modulator and High Voltage Conference, San Francisco, CA, July 6, 2016, TIC REG #: 28061.

191.) Bentz, W., Meitzler, T., Panagou, P., "Redistribution Method for Multiple Energy-constrained robots in 2D Environments", Robotics Science and Systems Conference, Univ. of Michigan, Ann Arbor, MI, June 18-22, 2016.

190.) Bankowski, E., Ho, J., Meitzler, T., White, J., “Non Destructive Testing of High Voltage Capacitors for Ground Vehicles,” Ground Vehicle Survivability Symposium, Nov., 2016.

189.) Bankowski, E., Ho, J., Meitzler, T., White, J., “High Voltage Capacitors Environmental Testing,” IEEE International Power Modulator and High Voltage Conference, July 5-7, 2016.

188.) **“**Arrays of Spintronic Detectors for Radar Frequency Analysis,” Bankowski, E., Meitzler, T., Ground Vehicle Survivability Symposium, Nov., 2016.

187.) “Situational Awareness and Sustained Survivability through Man/Unmanned Teaming,” Panagou, D., Bentz, W., Usevitch, J., Meitzler, T., Poster Presentation, Automotive Research Committee Yearly Review, Ann Arbor, MI, 2016.

186.) Lisenkov, I., Tyberkevych, V., Levin-Pompetski, L., Meitzler, T., Bankowski, E., Slavin, A., “Interaction of Microwave Photons with Nanostructures Magnetic Metasurface,” Phys. Rev. Applied, vol.5, June, 2016, TIC Reg. No. 27498.

185.) Meitzler, T., McCormick, M., “Armor Embedded Piezoelectric Transducers for Blast Measurement,” DTIC AD1007382, April, 2016.

184.) Meitzler, T., Ebenstein, S., Reynolds, T., “Final Report on a Handheld Ultrasonic Inspection System for PM Stryker,” DTIC AD1001598, Jan., 2016.

183.) Bankowski, E., Meitzler, T., "High Voltage Capacitors Environmental Testing" Jan. 2015, Reg. # 27530.