

Theodore Mathias Biewer

Diagnostics & Control Group Leader
R&D Senior Scientist
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Education

Ph.D. Plasma Physics, “Electron Thermal Transport in the MST”
University of Wisconsin-Madison: May, 2002
DOI 10.5281/zenodo.3785480
MS. Atmospheric and Oceanic Science
University of Wisconsin-Madison: December, 1997
MS. Physics, DOE Magnetic Fusion Science Fellow
University of Wisconsin-Madison: December, 1996
BS. Physics
BA. Mathematics
Summa Cum Laude, Barrett Honors College
Arizona State University: May, 1994

Recent Work Experience

Diagnostics & Control Group Leader since October 2020 until present; Research and Development Senior Scientist, Oak Ridge National Laboratory, January 2006 until present, primary role in diagnostic development, supervised by Dr. Phil Snyder (snyderpb@ornl.gov). PI of main-ion CXRS on JET at CCFE. PI of CXRS implementation on LTX at PPPL. PI of Digital Holography diagnostic development. PI of ARPA-E portable diagnostic package development. Diagnostic lead for Proto-MPEX and MPEX at ORNL.

Joint Faculty Associate Professor, University of Tennessee—Knoxville, August 2014 until present in the Bredesen Center for Interdisciplinary Research and Graduate Education, under Director Suresh Babu (sbabu@utk.edu).

Recent First Author Publications

T.M. Biewer, C.D. Smith, T.E. Gebhart, A. Greenhalgh, X. Ren and C.E. Thomas
“Considerations for *in situ*, real time measurement of plasma-material interactions using Digital Holographic imaging.” [Journal of Instrumentation](#), [Volume 15](#), [February 2020](#)

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T.M. Biewer, et al., “Utilization of O-X-B mode conversion of 28 GHz microwaves to heat core electrons in the upgraded Proto-MPEX.” *Physics of Plasmas* **26**, 053508 (2019).

T.M. Biewer, J.C. Sawyer, C.D. Smith, C.E. Thomas, “Dual laser holography for in situ measurement of plasma facing component erosion.” *Review of Scientific Instruments* **89** 10J123 (2018)

T.M. Biewer, T.S. Bigelow, J.F. Caneses, S.J. Diem, D.L. Green, N. Kafle, J. Rapp, “Observations of electron heating during 28 GHz microwave power application in Proto-MPEX.” *Physics of Plasmas* **25** 024501 (2018)

T.M. Biewer, S. Meitner, J. Rapp, H. Ray, G. Shaw, “First results from the Thomson scattering diagnostic on Proto-MPEX.” *Review of Scientific Instruments* **87** 11E518 (2016)

T.M. Biewer, G. Shaw, “Initial implementation of a Thomson scattering diagnostic for Proto-MPEX.” *Review of Scientific Instruments* **85** 11D812 (2014).

Community Service

Member of Program Advisory Committee for DIII-D, 2019-present
US Member of ITPA Diagnostics Topical Group, 2018-present
Council Member of USBPO, 2016-2019
Leader of Diagnostic Topical Group of USBPO, 2014-2016
Member of Program Advisory Committee for NSTX-U, 2014-2017
Co-Chair, 40th Topical meeting of HTPD, 2014
Member of Executive Committee of HTPD, 2014-present

Student Mentorship

Kurt Vetter, PhD candidate, UT-Knoxville; research mentor 2021-present
Zichen He, PhD candidate, UT-Knoxville; research mentor 2019-present
Cary Smith, PhD, UT-Knoxville; research mentor 2017-2020
Elizabeth Lindquist, MS UT-Knoxville; research mentor 2018-2020
 HERE intern at ORNL, 2017-2018
Holly Ray, PhD UT-Knoxville; advisor and research mentor 2015-2020
 HERE intern at ORNL, 2014-2015
Seungsup Lee, PhD candidate, UT-Knoxville; research mentor 2018-2019
Nischal Kafle, PhD UT-Knoxville; research mentor 2014-2019
Anurag Maan, PhD UT-Knoxville; research mentor 2014-2019
Melissa Showers, PhD UT-Knoxville; research mentor 2014-2018
Guinevere Shaw, PhD UT-Knoxville; research mentor 2013-2018