Thomas Christophel Robacker

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EDUCATION

East Tennessee State University
Master of Science, August 2015
- Major: Mathematical Sciences
- Thesis Title: "Comparison of Two Parameter Estimation Techniques for Stochastic Models"
- Conferred August 14, 2015.

University of Tennessee, Knoxville
Bachelor of Science, May 2013
- Double Major: Physics and Mathematics.

TEACHING EXPERIENCE
- Professor of Mathematics, July 2015 – Present
  Dept. of Mathematics – Warren-Wilson College at Asheville, North Carolina.
    - Instructor of several undergraduate Statistics and Calculus courses. Three courses per semester.
    - Developing R and R Studio curricula, tutorial videos, and documents.
    - Advising math and natural sciences students' theses.
    - Conducting independent research projects.

- Adjunct Faculty, January 2017 – Present
  Dept. of Mathematics – Asheville-Buncombe Technical College at Asheville, North Carolina
    - Instructor of Math 121, Technical Mathematics.

- Adjunct Faculty, Fall 2016 – Spring 2017
  Dept. of Mathematics – East Tennessee State University, Johnson City
    - Math 1530, Probability and Statistics, Spring 2014 through 2015.

- Upward Bound Instructor at ETSU, June 2015
    - Instructed several Probability and Statistics courses for the Upward Bound program at ETSU.
    - This is a federally funded program grant program that provides preparation for high school students from low-income families and those in which neither parent holds a bachelor's degree.

- Teaching Associate, East Tennessee State University, Present
  Dept. of Mathematics – East Tennessee State University, Johnson City
    - Instructed Math 1710, Pre-calculus, Summer 2014.
    - Instructed Math 1530, Probability and Statistics, Spring 2014 through 2015.

- Graduate Teaching Assistant, East Tennessee State University, Fall 2013 – Spring 2014
  Dept. of Mathematics, East Tennessee State University, Johnson City
    - Fall 2013, responsibilities included assisting professor with course instruction.
    - Spring 2014, instructed Math 1530 – Introduction to Probability and Statistics.

- Student Assistant, Math Tutorial Center (MTC), Fall 2009 to Spring 2013
  Dept. of Mathematics, University of Tennessee Knoxville
    o Tutoring students in freshman to junior level college math courses and proctoring exams.
    o Subjects tutored include probability and statistics, college algebra, single- and multi-variable calculus, differential equations and mathematical reasoning.

RESEARCH EXPERIENCE

Stochastic Modeling and Parameter Estimation
Master's Thesis: "Comparison of Two Parameter Estimation Techniques for Stochastic Models." August 2015.
Dept. of Mathematics, East Tennessee State University, Spring 2013 – Present
Thesis Advisor: Dr. Michele Joyner
- Applying parameter estimation techniques for deterministic models to stochastic models; a subject in early development. Developed a new method, the MCR method, for stochastic models.
- Techniques include OLS, GLS, Kalman Filtering and a new technique unique to stochastic models to be presented in the thesis.
- Ongoing research topic.

Undergraduate Research
Dept. of Physics, University of Tennessee, Knoxville, Fall 2010 – Summer 2012
High Energy/Particle Physics
Advisor: Dr. Stefan Spanier
- Worked with Dr. Spanier on multiple projects through the UT Physics Fellowship.
- Conducted research on diamond pixel particle detectors for use at the CMS experiment at CERN and in neutron irradiation studies of diamond detectors.
- Travelled to CERN to participate in a test beam experiment at the SPS during the summer of 2011.
- Results from test beam published in IEEE.

PUBLICATIONS

- Joyner, M and Robacker, T. *Development of the MCR Method for Estimation of Parameters in Continuous Time Markov Chain Models*. International Journal of Pure and Applied Mathematics, February 1, 2017. http://www.ijpam.eu/contents/2017-112-2/15/index.html
- Robacker, T. *Comparison of Two Parameter Estimation Techniques for Stochastic Models*. (2015). *Electronic Theses and Dissertations*. Paper 2567. http://dc.etsu.edu/etd/2567/
- Hall-Wilton, R.; et al. Studies of PLT-type Single-Crystal Diamond Pixel Detectors. 2011. *IEEE Nuclear Science Symposium Conference Record*.

PRESENTATIONS

- Robacker, T. January 2017. *R Workshop*. Presented at Warren Wilson College. A workshop on using R for statistical analysis and scientific use for faculty.
- Robacker, T. March 2015. *Parameter Estimation Techniques Applied to Stochastic Models*. Presented at the SIAM SEAS conference at UAB.
- Robacker, T. July 2012. *Neutron Irradiation of CVD Diamond Detectors*. Presented for the UT Physics Fellowship.
- Robacker, T. July 2011. *The Pixel Luminosity Telescope (PLT)*. Presented for the UT Physics Fellowship.

HONORS/AWARDS

- Outstanding Graduate Student Award, ETSU Math Department. April, 2015
- UT Physics Fellowship, University of Tennessee, Knoxville. Summer 2012
    - Summer research program for outstanding physics majors.
- UT Physics Fellowship, University of Tennessee, Knoxville. Summer 2011
- TN Student Assistant Award, Scholarship. 2012-2013
- Dorothy/Rufus Ritchie Physics Scholarship. 2008-2009
    - Scholarship for promising incoming physics majors.

PROFESSIONAL DEVELOPMENT

- Robacker, T. January 2017. *R Workshop*. Presented at Warren Wilson College. A workshop on using R for statistical analysis and scientific use for faculty.
- Tutorial Workshop on Parameter Estimation for Biological Models, North Carolina State University, August 2014.

CLUBS & ORGANIZATIONS

- Member, Kappa-Mu-Epsilon – ETSU. Initiated April, 2014.
    - Officer Position: Treasurer 2014-2015
    - Math Honors Society.
- Member, Pi-Mu-Epsilon – UTK. Initiated Spring 2013.
    - Math Honors Society.
- Member, Judo Club, UTK. Spring 2009 – Fall 2009
- Member, Ballroom Dance Team, UTK. Fall '10 – Spring 2011

TECHNOLOGY/COMPUTER SKILLS

Typesetting
- Experience with LaTeX, Microsoft Office Suite, and LibreOffice.

Programming and Software
- Experience with C, C++, Python, R.
- Software experience includes Matlab, Maple, ROOT, LabView, Minitab, Rstudio, Desire2Learn, Blackboard and Linux (Fedora, Ubuntu).

Electronics
- Familiar with many electronics inherent to high energy physics including oscilloscopes, photomultiplier tubes, and essential basic circuits.