

Curriculum Vitae

DEBORAH ANN FIXEL

Department of Engineering
Trinity College
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EDUCATION:

Ph.D. in Electrical Engineering, University of Wisconsin, Madison, August 2007
Concentrations: Electrical Engineering, Solid State/Microelectronics
Dissertation: **“Hot carrier modeling in metal-oxide-semiconductor devices using the convective scheme”**
Advisor: Professor William N. Hitchon

M.S. in Electrical Engineering, University of California, Los Angeles, August 1999
Concentrations: Electrical Engineering, Solid State Electronics
Thesis: **“Scaling and Optimization of Silicon-on-Sapphire Complimentary Metal-Oxide-Semiconductor (CMOS) for Low Power Applications”**

B.E. in Electrical Engineering, University of New Mexico, Albuquerque, New Mexico, May 1988

TEACHING EXPERIENCE:

Lecturer and Laboratory Coordinator, Department of Engineering, Trinity College,
07/01/2019 – present

Visiting Lecturer and Laboratory Coordinator, Department of Engineering, Trinity College,
07/01/2017 – 06/30/2019

Visiting Assistant Professor, Department of Engineering, Trinity College, 07/01/2015-
06/30/2017

Visiting Assistant Professor, Department of Electrical and Computer Engineering, Lafayette
College, 07/01/2013-06/30/2015

Courses taught: Introduction to Engineering, Basic Electric Circuit Analysis, Introduction to
Solid State Devices and Circuits, Analysis and Design of Solid State Circuits, Engineering
Electromagnetics, and Physics of Semiconductors

Teaching Assistant, University of Wisconsin, Madison, Department of Electrical and Computer
Engineering, 09/02/1999-12/20/2002

Courses taught: Basic Electric Circuits, Electromagnetics and Semiconductor Device Physics

Teaching Assistant, University of California, Los Angeles, Electrical Engineering Department, Spring 1997

Course taught: Semiconductor Devices Fabrication Laboratory

COURSES TAUGHT: † = new course developed

ENGR 307L – Semiconductor Electronics I

ENGR 308L – Semiconductor Electronics II

ENGR 212L – Linear Circuit Theory

ENGR 200 - Measurement, Instrumentation and Analysis†

ENGR 483 – Capstone Design I

ENGR 484 – Capstone Design II

ENGR 110 – Engineering Computation and Analysis

FYSM 133- The Anatomy of Forgiveness†

RESEARCH EXPERIENCE:

Lecturer and Laboratory Coordinator, Department of Engineering, Trinity College, 07/01/2019-present

Supervised undergraduate research for summer research program. Research was conducted during the summer of 2019 using COMSOL Multiphysics Simulation Software to perform a scaling study of MOSFETs. Research was conducted during the summer of 2020 to explore the FINFET device, and simulations were performed using an online tool available on nanohub.org.

Contract Associate, Sandia National Laboratories, 11/26/2007-07/25/2013

Responsibilities included code development for Charon device simulator, an object-oriented C++ code. Implemented physical models for metal-oxide-semiconductor field-effect transistors and heterojunction bipolar transistors, including radiation effects models. Also contributed to code verification efforts, regression testing, code maintenance and documentation.

Year-round Graduate Student Intern, Sandia National Laboratories, 09/04/2005-11/22/2007.

Duties included software development for Charon device simulator. Implemented physical models for semiconductor devices and participated in verification efforts, code maintenance and documentation.

Summer Intern, Sandia National Laboratories, 06/01/2005-08/15/2005 and 06/01/2004-08/15/2004. Duties included software development for Charon device simulator.

Summer Intern, Sandia National Laboratories, 05/27/2003-08/12/2003. Duties included software development for Xyce, an in-house circuit simulator. Added physical models to the semiconductor device package for Xyce.

Research Assistant, University of California, Los Angeles, 1995-1999. Performed optimization and scaling studies for silicon-on-sapphire (SOS) complementary metal-oxide-semiconductor (CMOS) transistor devices.

RELATED EXPERIENCE:

Project Engineer, United States Air Force, Los Angeles Air Force Base, 10/12/1988-12/01/1992. Contributed to team efforts to manage cost and schedule for multi-million dollar satellite program in support of Strategic Defense Initiative Program.

PROFESSIONAL ORGANIZATIONS:

Institute of Electrical and Electronics Engineers (IEEE)

STUDENT HONORS AND AWARDS:

Gerald Holdridge Award for Excellence in Teaching (University of Wisconsin, Madison), 2002.

Eta Kappa Nu, Electrical Engineering Honor Society, 1987.

FUNDING AWARDS:

Trinity College Center for Teaching and Learning Fellow, 2022-2023.

PI Trinity College Faculty Research Grant to support undergraduate research, \$3500, 2020.

PI Trinity College Faculty Research Grant to support undergraduate research, \$3500, 2019.

SERVICE AND LEADERSHIP ACTIVITIES:

Advising Fellow – Center for Academic Advising 2022 - present

UCLA Scholarship application reviewer 2021 – present

Faculty Advisor of the Trinity College Student Chapter of the Society of Women Engineers (SWE) 2018 - present

Trinity College liaison for CT Tech Council College Tech Challenge 2017 - 2018

JOURNAL PUBLICATIONS:

D.A. Fixel, G.L. Hennigan and W.R. Wampler, “Modeling of III-V HBTs exposed to neutron irradiation”, Journal of Radiation Effects, Research and Engineering (JRERE), 1 February 2013.

D.A. Fixel and W.N.G. Hitchon, “Kinetic investigation of electron-electron scattering in nanometer-scale metal-oxide-semiconductor field-effect transistors”, Semiconductor Science and Technology, March 2008.

D.A. Fixel and W.N.G. Hitchon, “Convective scheme solution of the Boltzmann transport equation for nanoscale semiconductor devices”, Journal of Computational Physics, December 2007.

CONFERENCE PROCEEDINGS AND ABSTRACTS:

D. Subedi and D.A. Fixel, “MOSFET Channel Engineering and Scaling Study using COMSOL Multiphysics Simulation Software”, COMSOL Multiphysics Conference 2019 Proceedings, COMSOL, Boston, Massachusetts, October 2019.

D.A. Fixel, G.L. Hennigan and W.R. Wampler, “Modeling of III-V HBTs exposed to neutron irradiation”, Hardened Electronics and Radiation Technology (HEART) Conference, Monterey, California (March 13-16, 2012).