

JAMES A TURTLE

EDUCATION

PhD Computational Science, 2016

Joint Program: Claremont Graduate University, Claremont, CA
San Diego State University, San Diego, CA

Dissertation: Synchronization in Coupled Spin-Torque Nano Oscillators: Nonlinear Dynamics Analysis

Master of Science Applied Mathematics, 2012

San Diego State University, San Diego, CA

Thesis: Numeric Exploration of the Dynamics of Coupled Spin-Torque Nano Oscillators

Bachelor of Science Electrical Engineering, May 2008

Kansas State University, Manhattan, KS

PROFESSIONAL EXPERIENCE

Research Scientist, 2016-present

Predictive Science, San Diego, CA

- Data-driven mechanistic modeling of infectious diseases.
- Develop R package with MCMC procedure in a Fortran engine.
- Parallelize model-fitting and implement on high-performance computing platforms.
- Automate data-processing that requires spatial overlay of administrative boundaries (GADM), satellite climate data, and population density data (SEDAC).

Senior Intern, 2015-2016

Predictive Science, San Diego, CA

- Evaluate Google Flu Trends as a predictor for CDC Influenza-Like-Illness (ILI).
- Analyze ILI data for recurring features and create appropriate model alterations.

Research Assistant, 2010-2015

NSF Grant CMMI-1068831, San Diego, CA

- Analyze the nonlinear-dynamics of an array of STNOs (coupled ordinary differential equations) to determine conditions for synchronization.
- Develop and code an algorithm to approximate three dimensional separatrix manifolds in a four dimensional system.
- Generate numeric-bifurcation diagrams using the XPPAUT-package.

Naval Research Enterprise Internship Program (NREIP), Summer 2013

SPAWAR-Pacific, San Diego, CA

- Leveraged S_N -normal form to determine the stability of synchronized and out-of-phase oscillations for large arrays of identical STNOs.

Teaching Assistant, Fall 2011

San Diego State University, San Diego, CA

- Instructed the computer-lab recitation of Calculus I for Life Sciences.
- Supervised three sections with a total of 120 students.

Naval Research Enterprise Internship Program (NREIP), Summer 2011
SPAWAR-Pacific, San Diego, CA

- Implemented a Multiple Hypothesis Tracking (MHT) algorithm in MATLAB.
- Integrated the MHT routine into a preexisting tracking algorithm/code.

ASSOCIATION MEMBERSHIPS

- Institute of Electrical and Electronics Engineering (IEEE)
- Society for Industrial and Applied Mathematics (SIAM)
- American Mathematical Society (AMS)
- Eta Kappa Nu - Electrical Engineering Academic Honor Society
- Mortar Board - Undergraduate Senior Honor Society

PUBLICATIONS

Peer Reviewed

J Turtle, PL Buono, A Palacios, C Dabrowski, V In, and P Longhini. “Synchronization of spin torque nano-oscillators”. In: *Phys. Rev. B* 95 (14 2017), p. 144412

J Turtle, K Beauvais, R Shaffer, A Palacios, V In, T Emery, and P Longhini. “Gluing bifurcations in coupled spin torque nano-oscillators”. In: *J. Appl. Phys.* 113.11 (2013), p. 114901

Conference Proceedings

J Turtle, A Palacios, P Longhini, and V In. “Invariant Tori in a Network of Two Spin-Torque Nano Oscillators”. In: *Int. Conf. Appl. Nonlinear Dynamics*. Springer, Cham. 2016, pp. 1–12

K Beauvais, A Palacios, R Shaffer, J Turtle, V In, and P Longhini. “Coupled Spin Torque Nano-Oscillators: Stability of Synchronization”. In: *Interdisciplinary Topics Appl. Math., Modeling, and Comput. Sci.* Springer, 2015, pp. 43–48

J Turtle, A Palacios, V In, and P Longhini. “The Dynamics of Coupled Spin-Torque Nano Oscillators: An Initial Exploration”. In: *Int. Conf. Theory App. Nonlinear Dynamics*. Springer. 2014, pp. 285–291

PL Buono, C Dabrowski, A Palacios, J Turtle, and V In. “Collective Behavior of an Array of Spin-Torque Nano Oscillators”. In: *Nanotech 2014: MEMS, Fluidics, Bio Systems, Medical, Comput., and Photonics*. 2014, pp. 391–394