BRIAN DAMIANO, PH.D., P.E.

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| **Education** |
| Ph.D. Mechanical Engineering, The University of Tennessee, Knoxville, TN, December 1992 Thesis: *Application of Weighted Residual Methods to Investigate the Nonlinear Dynamics of Boiling Water Reactors* |
| M.S. Nuclear Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, December 1982 Member Tau Beta Pi and Pi Tau Sigma academic honor societies.Thesis: *Thermal Hydraulic Analysis of a Spectral Shift Reactor Core* |
| B.S. Mechanical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, June 1981 |

**Work History:**

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| 4/2008–present | Section Head, Centrifuge Engineering and Fabrication Section, Enrichment Science and Engineering Division, Oak Ridge National Laboratory, Oak Ridge, TennesseeAs Section Head for the Centrifuge Engineering and Fabrication Section, I manage and coordinate the activities of four diverse groups – the Machine Dynamics Group, the Engineering Design Group, the Prototype Fabrication Group, and the Modeling and Data Science Group. Taken together, these Groups form a center of excellence of centrifuge science research and development in the United States.This position requires good communication skills, both verbal and written, and the ability to interface effectively with peers and team members. |
| 4/2008–present | Distinguished R&D Staff, Enrichment Science and Engineering Division, Oak Ridge National Laboratory, Oak Ridge, TennesseeI play a significant management role in ORNL programs involving isotope separation and nuclear nonproliferation. I am the Control Account Manager for the Research and Development portion for ORNL’s Domestic Uranium Enrichment Centrifuge Experiment Project. In this role, I provide management oversight to the project’s R&D activities. |
| 4/2008–10/2020 | Distinguished R&D Staff, Electrical and Electronics Systems Research Division, Oak Ridge National Laboratory, Oak Ridge, TennesseeI played significant technical and management roles in ORNL programs involving isotope separation and nuclear nonproliferation. My technical contributions were in the areas of rotor dynamic analysis, suspension design, and balancing of gas centrifuge rotors. I was the Control Account Manager for the Research and Development portion for ORNL’s Domestic Uranium Enrichment Centrifuge Experiment Project. In this role, I was responsible for providing technical direction and management oversight to the project’s R&D activities. |
| 4/2008–10/2020  | Group Leader, Dynamic Systems Analysis Group, Electrical and Electronics Systems Research Division, Oak Ridge National Laboratory, Oak Ridge, TennesseeAs Group Leader for the Dynamic Systems Analysis Group, I provided scientific and technical direction, perform program development activities, and served as a liaison between group members and upper management. This position requires good communication skills, both verbal and written, and the ability to interface effectively with peers and team members. |
| 1/2006–4/2008 | *Senior Research Staff*, Engineering Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TennesseeI served as the subject matter expert for the U.S. Enrichment Corporation’s American Centrifuge Project in the areas of rotor dynamics and centrifuge rotor balancing and was the Rotor Balance Integrated Product Team leader. I developed the rotor balancing algorithms used by the project and provided technical direction in the areas of rotor dynamics, rotor balancing, and suspension matching. Part of this work involved transferring the balancing technology to Babcock and Wilcox- Clinch River staff members for application in rotor manufacturing. I also played a significant role in ORNL programs in the area of nuclear nonproliferation. |
| 10/1985–1/2006 | *Research Staff*, Engineering Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TennesseeI developed and implemented rotor balancing algorithms for gas centrifuges and developed and used computer codes to perform detailed rotor dynamic analysis. In the area of mechanical system diagnostics, I developed diagnostic methods that included a noncontact method for measuring mechanical strain in moving components and a model-based method for interpreting vibration signatures. In the area of dynamic system analysis, I applied weighted residual methods to investigate the dynamics of boiling water reactors during limit cycle oscillations, performed simulation modeling of pressurized water reactor fuel assemblies, rotating machinery, and other structures to determine their dynamic characteristics, and applied nonlinear systems techniques to develop a sensitive method for detecting changes in time series. I have also used finite element methods and theory of elasticity solutions to analyze components used in the control rod drives of the Advanced Neutron Source reactor and designed gas-handling systems used in the decontamination/decommissioning of the Molten Salt Reactor. |
| 2/1983–9/1985 | *Development Engineer*, Separation System Division, Oak Ridge National Laboratory, Oak Ridge, TennesseeI made major modifications to existing rotor dynamics codes and developed a code that reduced the time required to perform suspension impedance matching by a factor of twenty. I modeled gas centrifuges for use in computer simulation models and performed gas centrifuge rotor balancing. |
| 9/1981–12/1983 | *Graduate Assistant*, Department of Mechanical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia |
| 9/1977–9/1981 | *Cooperative Education Student Intern*, Nuclear Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee |

**AWARDS AND HONORS**

Department of Energy (DOE) Secretarial Honor Award, Project Kalamazoo Team, 2018

Recognized for special achievement and application of specialized technical expertise to support nonproliferation goals of the DOE and the US Government.

National Intelligence Meritorious Unit Citation, Wild Turkey/Buffalo Trace Team, 2017

The most prestigious National Intelligence Community Award for a team contribution.

**PROFESSIONAL ASSOCIATIONS AND AFFILIATIONS:**

American Society of Mechanical Engineers – member ID number 266288

Society of Experimental Mechanics - member ID number 1090.

Registered Professional Mechanical Engineer, Tennessee #19,572.

**PATENTS:**

Damiano, B. and R. T. Wood, Automated Method for the Systematic Interpretation of Resonance Peaks in Spectral Data, US Patent Inventor, U.S. Patent 5,623,579, April 22, 1997.

**PUBLIC SERVICE:**

Beaver Ridge United Methodist Church: Member since 1994. Building Committee Chairman during the design, fund raising, and construction of a $2.2M family life center (2000-2004).

Scouting USA – Served as the Den Leader for Pack 50, Knoxville, Tennessee, (2007-2012) and Troop Committee Chairman/Assistant Scoutmaster for Troop 50, Knoxville, Tennessee (2012-2020). Advisor for two Philmont Crews (2017 & 2019).

**SELECTED PUBLICATIONS:**

# Damiano, B., Estimating Rotor Suspension Parameters from Runout Data, *IMAC-XXXV Conference & Exposition on Structural Dynamics*, Orlando, Florida, January 28-31, 2019, Society for Experimental Mechanics, Bethel, Connecticut, 2017.

**Damiano, B**., Introduction to Rotor Dynamics and Balancing, *IMAC-XXXV Conference & Exposition on Structural Dynamics*, Garden Grove, California, 30 January – 2 February 2017, Society for Experimental Mechanics, Bethel, Connecticut, 2017.

**Damiano B, H. D. Haynes, and R. W. Tucker, Jr.,** Potential Application of Electrical Signature Analysis Methods for Monitoring Small Modular Reactor Components,*Seventh American Nuclear Society International Topical Meeting on Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies*, Las Vegas, Nevada, November 7-11, 2010, American Nuclear Society, LaGrange Park, IL, 2010.

**Damiano, B., E. D. Blakeman, and L. D. Phillips.** Detection and Location of Structural Degradation in Mechanical Systems, GLOBAL’99, International Conference on Future Nuclear Systems, Jackson Hole, Wyoming, September 1999.

**Damiano, B., and J. E. Breeding,** *Application of Polynomial and Radial Basis Function Maps to Signal Masking*, ORNL/TM-13515, Oak Ridge National Laboratory, January 1998.

**Damiano, B., J. A. March-Leuba, and J. A. Euler,** Application of Galerkin’s Method to Calculate the Behavior of Boiling Water Reactors During Limit-Cycle Oscillations, *Nucl. Sci. Eng.* **113**, 271-81 (1993).

**Damiano, B.,** A Model-Based Method for Monitoring the Structural Condition of Mechanical Systems, in *Proceedings of the National Laboratories Combat Service Support Technologies Review Workshop, Oak Ridge, Tennessee, Nov 2-4, 1993*, 1993.

**Damiano, B.,** Application of Weighted Residual Methods to Investigate the Nonlinear Dynamics of Boiling Water Reactors, Ph.D. Dissertation, The University of Tennessee, October 1992.

**Damiano, B., and R. C. Kryter,** *Current Applications of Vibration Monitoring and Neutron Noise Analysis to Detect and Diagnose Structural Degradation of Reactor Vessel Internals Resulting from Operational Aging*, NUREG/CR-5479, ORNL/TM-11398, Oak Ridge National Laboratory, Martin Marietta Energy Systems, Inc., February 1990.

**Damiano, B., R. E. Funderlic, F. H. Speckhart, and M. L. Stephens,** (U) *CYLINDER, A Computer Program to Predict Steady-State Deflection and Critical Speeds of a Centrifuge*, K/TS-5716, Oak Ridge Gaseous Diffusion Plant, August 1985 (S-RD).