Bree R. Peryea, PhD

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Maiden name: Mathon

EDUCATION

Ph.D. 2011 *Civil and Environmental Engineering*; University of Vermont, Burlington, VT
Advisors: George F. Pinder and Donna M. Rizzo, GPA 3.82
Dissertation: Assessing uncertainty associated with groundwater and watershed problems using fuzzy mathematics and generalized regression neural networks

Graduate Student in Mathematical Sciences, 2004-2006
The University of Vermont, Burlington, VT
Advisor: George F. Pinder

M.S. 2002 *Earth and Space Sciences*; SUNY Stony Brook, Stony Brook, NY
Advisor: Martin A.A. Schoonen, GPA: 3.92
Thesis title: Dissipation of chemical and thermal disequilibrium in hot springs

B.S. 1999 *Mathematics/Specialization in Chemistry*; Hofstra University, Hempstead, NY; Magna Cum Laude; GPA 3.82

TEACHING EXPERIENCE

Aug. 2017-Present **Lecturer at the University of Vermont**

Sept. 2016-Present **Part-time faculty at the Community College of Vermont**:
Applied Mathematical Concepts, Physics 1

Jul. 2016-May 2017 **Part-time faculty at the University of Vermont***:*
MATH 271: Advanced Engineering Mathematics, ENGR010: Diversity Issues: Math/Science/Engineering, ENGR050: First Year Engineering Seminar, ENGR101: Engineering Communications

2012-2017 **Part-time faculty at Johnson State College**:
Physics 1, Physics 2, Hydrogeology, Global Environmental Issues

2008 **Guest Lecturer at the University of Vermont:**
Water & Wastewater Engineering
- Mixing & Flocculation

- Orange County: Groundwater Replenishment System
- Low Cost Water Purification

2007 **Guest Lecturer at the University of Vermont:**
Hydraulics
- An Introduction to Drag Force
- The Motility of Bacteria (and how it affects their transport in the subsurface)

Environmental & Transportation Systems
- An Introduction to STELLA

Teaching Assistant at the University of Vermont:
-*Environmental & Transportation Systems*, Spring and Fall Semesters

2001 **Teaching Assistant at the State University of New York, Stony Brook:**
-*Groundwater Hydrology*

2000 **Guest Lecturer at the State University of New York, Stony Brook:**
Geochemistry of Surficial Processes
-Thermodynamics

Teaching Assistant at the State University of New York, Stony Brook:
-*Geochemistry of Surficial Processes*
-*Natural Hazards*

PROFESSIONAL EXPERIENCE

Professional Academic Coach, Johnson State College **September 2015 – May 2017**
Academic Support Services, Johnson, VT
- Tutored students in mathematics, chemistry, physics
- Worked with students to develop organizational skills
- Assisted students, including several with diagnosed learning disabilities, in developing effective study techniques
- Facilitated conversations between student and instructor as needed
- Developed lesson plans for math sessions to be held during the TRIO Summer Bridge program (August 15 - August 19, 2016)

Research Assistant, University of Vermont **2004 - 2010**
School of Engineering, Burlington, VT
- Used Dempster-Schafer Theory to account for uncertainty that surrounds permeability measurements and is typically lost in data analysis

- Modified the fuzzy least-squares regression model and used it to account for uncertainty involved in using the Cooper-Jacob method to determine transmissivity and the storage coefficient.
- Collaborated on an interdisciplinary project applying an artificial neural network to explore links between physical stream conditions and biological health
- Developed a new fuzzy generalized artificial neural network algorithm

Medical Billing Specialist, Orthopaedic Associates of Southern Delaware 2002 – 2003
Billing Department, Lewes, DE

- Assisted patients with billing issues
- Responsible for sending out insurance claim forms
- Resolved claim issues with insurance companies for the groups spinal surgeon

Research Assistant, The State University of New York at Stony Brook 2001 – 2002
Department of Earth and Space Science, Stony Brook, NY

- Adapted a method based on transport-controlled dissolution rate of gypsum to quantify turbulence in hot spring drainages
- Performed *in situ* analysis of drainages: measured flow rates, recorded temperature, physical measurements
- Analyzed hot spring water samples using ion chromatography and gas chromatography

Medical Billing Assistant, Lindenhurst Eye Physicians & Surgeons 1995 – 1999
Billing Department, Lindenhurst, NY 11757

- Responsible for sending out paper claims to insurance companies as well as daily office mail
- Resolved claim issues with insurance companies
- Assisted office with daily tasks such as filing, checking patients in/out/answering phone calls as needed

Tutor, Hofstra University 1997- 1999
Hempstead, NY

- Tutored students in lower level mathematics courses and general chemistry

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PUBLICATIONS

Mathon, B.R., Rizzo, D.M., Ozbek, M.M., Pinder, G.F., Fuzzy generalized regression neural network methodology, *in preparation*.

Mathon, B.R., Schoonen, M.A.A., Riccardi, A., Borda, M.J., 2015. Measuring flow rates and characterizing flow regimes in hot springs, *Applied Geochemistry* **62**, pp. 234 - 246.

Mathon, B.R., Stevens, L., Kline, M., Alexander, G., Fiske, S., Langdon, R., Rizzo, D.M., 2013. Assessing linkages in stream habitat, geomorphic condition, and biological integrity using a generalized regression neural network, *Journal of the American Water Resources Association – JAWRA* **49** (2), pp. 415-430.

Mathon, B.R., Ozbek, M.M., and Pinder, G.F., 2010. Dempster-Shafer theory applied to uncertainty surrounding permeability, *Mathematical Geosciences* **42** (3), pp. 293 - 307.

Mathon, B.R., Ozbek, M.M., and Pinder, G.F., 2008. Transmissivity and storage coefficient estimation by coupling the Cooper-Jacob method and modified fuzzy least-squares regression, *Journal of Hydrology* **353** (3-4), pp. 267-274.

Druschel, B.R., Borda, M.J., Schoonen, M.A.A., 2004. A gas transfer study at Ojo Caliente, Yellowstone National Park, USA, Water Rock Interaction 11, Saratoga Springs, NY, Volume 1, 119-123.

PRESENTATIONS

Assessing linkages between stream geomorphic condition and habitat health using a generalized regression neural network; **Mathon, B.R.**, Rizzo, D.M., Kline, M., Alexander, G., Fiske, S., Langdon, R., Stevens, L., Infrastructure Development for Research and STEM Education: Focus on the Lake Champlain Basin, Burlington, VT; June 2011 (poster).

Using a generalized regression neural network to link geomorphic and habitat assessments in the Missisquoi River watershed; **Mathon, B.R**., Fytilis, N., Stevens, L., Kline, M., Alexander, G., Rizzo, D.M., Lake Champlain 2010 Conference: Our Lake, Our Future, Burlington, VT; June 2010 (poster).

Using a complex systems tool to link geomorphic and habitat assessments in the Lake Champlain Basin; **Mathon, B.R.**, Stevens, L., Kline, M., Alexander, G., Fiske, S., Pinder, G.F., Rizzo, D.M., Vermont EPSCoR Annual State Meeting, Burlington, VT; March 2010 (presentation).

Classifying Vermont stream habitat condition using a generalized regression neural network; **Mathon, B.R**., Fytilis, N., Stevens, L., Kline, M., Alexander, G., Rizzo, D.M., Vermont Geological Society Winter Meeting: Geologic Controls on River Systems in the Northeastern U.S, Northfield, VT; February 2010 (poster).

Stream classification linking geomorphic and habitat assessments using artificial neural networks; Fytilis, N., **Mathon, B.R**., Rizzo, D.M., Stevens, L., Morrissey, L., Fall American Geophysical Union Meeting, San Francisco, CA; December 2009 (poster).

A DNA based method to identify oligocheate taxa in stream communities in the Madison River, MT, USA; Stevens, L., Lodh, N., Rizzo, D.M., **Mathon, B.R.,** Kerans, B., International Oligiocheate, Turkey; October 2009.

Linking geomorphology, habitats, and biota in streams using artificial neural networks; **Mathon, B.R.**, Stevens, L., Kline, M., Burnham, D., Fiske, S., Watzin, M., Pinder, G.F., Rizzo, D.M., Vermont EPSCoR Annual State Meeting, Burlington, VT; June 2009 (presentation).

Scaling-up bacterial transport: The development of tools to model pathogen migration at multiple scales; **Mathon, B.R.**, and Hill, J.E., Vermont EPSCoR Annual State Meeting, Burlington, VT; June 2008 (poster).

An application of Dempster-Shafer theory to hydraulic conductivity*;* **Druschel, B.R.**, Ozbek, M.M., Pinder, G.F., Computational Methods in Water Resources, Copenhagen, Denmark; June 2006 (presentation).

Integration of fuzzy and probabilistic information in the description of hydraulic conductivity; **Druschel, B.R**., Ozbek, M.M., Pinder, G.F., Fall American Geophysical Union Meeting, San Francisco, CA; December 2004 (poster).

A gas transfer study at Ojo Caliente, Yellowstone National Park, USA; **Druschel, B.R**., Borda, M.J., Schoonen, M.A.A., Water Rock Interaction 11, Saratoga Springs, NY; June 2004 (poster).

Dissipation of thermal and chemical disequilibrium in hot springs: Big Boiler, Lassen Volcanic National Park; **Mathon, B.R**., Schoonen, M.A.A., 11TH Annual V.M. Goldschmidt Conference, Hot Springs, VA; May 2001 (presentation).

CONTRIBUTIONS

Johnson State College, 2016. *Physics 1 Laboratory Manual: PHY-1041*. Sagamore Beach, MA: Academx Publishing Services, ISBN-13: 978-1-68284-145-7.

HONORS AND AWARDS

- Excellence in Teaching Award for part-time faculty, Johnson State College, 2015
- Faculty Award for Outstanding Graduating Math Major, Hofstra University, 1999
- Provost List, Hofstra University, Senior Year

PROFESSIONAL AFFILIATIONS

Membership
Phi Beta Kappa, Hofstra University
Kappa Mu Epsilon (National Mathematics Honor Society), Hofstra University
Golden Key National Honor Society, Hofstra University

Manuscript Reviews
Journal of the American Water Resources Association (JAWRA)
Canadian Journal of Forest Research

TRAINING

Experience with: MATLAB, JMP, MODFLOW, gas chromatography

ACTIVITIES

- Member of the Diversity Task Force at Johnson State College, September 2016 – May 2017.
- Faculty advisor for the Olympic Weightlifting Club at Johnson State College, September 2016 – December 2016.
- Graduate Student Representative on Search Committee for Director of School of Engineering, Spring 2009
- Member of Student Health Insurance Task Force, September 2006-May 2007
- Outreach & Programs Director for the Graduate Student Senate, June 2005 - May 2006
- Graduate Student Senate, June 2005-December 2007