

Rashad Baiyasi

601 Litchfield St, Bay City, MI 48706 • (989)859-1167 • ribaiyas@svsu.edu

Profile

4.0 GPA Bachelor of Science Degree with **physics major** and math/chemistry minor. **University instructional experience** in physics with students of **diverse domestic and international** backgrounds. Wide range of computer and **programming proficiency**. Years of **outreach and mentoring** inner-city high school students.

Skills

- Computer Proficiencies
 - **Programming experience with Matlab, Lumerical FDTD Solutions, Java, R, Python, C++, Visual Basic**
 - *MS Office: Word, PowerPoint, Excel, Access*
 - *Maple 15, Mathematica 7, Minitab*
 - *Adobe Suite CS4: Photoshop, InDesign, Illustrator, Flash*
- Exams
 - General GRE – 11/20/2012
 - *Verbal Reasoning: 163 (91%)*
 - *Quantitative Reasoning: 167 (94%)*
 - *Analytical Writing: 5.0 (92%)*
 - Subject GRE – 10/25/2014
 - *Physics: 840 (77%)*
 - Actuarial Exam P – 5/13/2013
 - *Probability: 10 (max score)*
- Teaching/Tutoring Assets
 - *Relaying complex mathematical and scientific concepts in relatable terms.*
 - *Managed team of teaching assistants working with students to meet educational benchmarks.*
 - *Trained in recognizing and adapting to various learning styles.*
 - *Coordinated schedules with coworkers as an adjunct professor.*
 - *Overcoming cultural and language barriers with international students.*
- Cartooning, Design, and Fine Art
 - *First Place for Editorial Cartoon & General Excellence Award for Design – Michigan Press Association*

Education

Bachelor of Science, GPA: 4.0 Saginaw Valley State University Dec 2012
Major: Physics Minor: Math/Chemistry

Associate of Science, GPA: 3.99 Delta College, May 2009

Research Experience

Computational: Fluorescence Microscopy and Nano-Plasmonics

- *Primary Investigator: Dr. Christy F. Landes, Rice University (Fall 2015-present)*
 - Finite-difference time-domain simulation of plasmonic nanoparticles and fluorescent molecules.
 - Developed optimization algorithm for fitting novel point spread function model for multi-lobed emission patterns near plasmonic nanoparticles.
 - Designed graphic user interface for observation of fluorescent blinking and bleaching in total-internal reflectance and epi-fluorescence microscope modes.

Experimental: Condensed Matter physics

- *Research Advisor: Dr. Matthew Vannette, SVSU (Fall 2011-Winter 2011)*
 - Studied growth and properties of metallic single crystals.
 - Measured resistivity, magnetic moment, and magnetic susceptibility at low temperatures of single crystal growth of metallic compounds.
 - Calculated growth methods for metallic crystals, specifically MnSn₂ and CrSb₂
 - Constructed and operated vacuum system to remove oxygen from growth cells.
 - Extensive experience using oxygen-hydrogen torch to prepare and seal fused silica "quartz" tubes.
 - Motivated by results, repeated trials to obtain successful MnSn₂ single crystal growths.

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Theoretical: Quantum Spin chains

- *Research Advisor: Dr. Rajan Murgan, SVSU (Winter 2012)*
 - Studied open and closed integrable quantum spin chains for various quantum spin and parameters, including Yang-Baxter equation, transfer matrix, T-Q relations.
 - Explored use of Bethe-ansatz-type expression to find eigenvalues of the transfer matrix.
 - Experienced editing Wolfram Mathematica code for open and closed spin chains by varying quantum spin and parameters.
 - Calculated energy eigenvalues of spin chain using Wolfram Mathematica.
 - Experienced submission and publication process, Proof-read various drafts.

Publications

- [1]. Shen, H.; Tauzin, L. J.; Baiyasi, R.; Wang, W.; Moringo, N.; Shuang, B.; Landes, C. F. **Single Particle Tracking: From Theory to Biophysical Applications**. *Chem. Rev.* **2017**, *117* (11), 7331–7376
- [2]. Hoener, B. S.; Zhang, H.; Heiderscheidt, T. S.; Kirchner, S. R.; De Silva Indrasekara, A. S.; Baiyasi, R.; Cai, Y.; Nordlander, P.; Link, S.; Landes, C. F.; Chang, W.-S. **Spectral Response of Plasmonic Gold Nanoparticles to Capacitive Charging: Morphology Effects**. *J. Phys. Chem. Lett.* **2017**, *8* (12), 2681–2688
- [3]. Baiyasi, R.; Murgan, R. **Generalized T – Q Relations and the Open Spin- S XXZ Chain with Nondiagonal Boundary Terms**. *J. Stat. Mech. Theory Exp.* **2012**, *2012* (10), P10003

Honors & Awards

Membership in Honor Societies

- Sigma Pi Sigma (The National Physics Honor Society), SVSU, Inducted 2/24/2012
- Phi Theta Kappa (The International Honor Society of Two- Year Colleges), Xi Delta Chapter. Inducted 2009
- Eagle Scout, Order of the Arrow Brotherhood member

Academic Honors and Awards

Rice University

- Top ELEC 599 Award for First-Year Research Project “Characterization and Localization of Complex Fluorescence Point Spread Functions” Spring 2016
- 1st Annual Smalley-Curl Institute Transdisciplinary Symposium, Award for Research Presentation, Spring 2016
- 2nd Annual Smalley-Curl Institute Summer Research Colloquium, Award for Poster Presentation, Summer 2016
- 2nd Annual Smalley-Curl Institute Transdisciplinary Symposium, Award for Poster Presentation, Spring 2017

Saginaw Valley State University

- President's List for 2010, 2011
- Treasurer of Music & Motion (Swing Dance Club) Fall 2011 through Winter 2012
- Physics Club officer Fall 2011-Winter 2012
- President of Physics Club Fall 2012

Delta College

- Member of Honors Program & Honors Leadership Board
- President's List from Fall 2007- Winter 2009
- Vice-President's List for Fall, Winter 2010
- Board of Trustees Scholastic Achievement Award for a 4.0 GPA
- Interned in Biomedical Engineering laboratory at Michigan Technological University through the Michigan College/University Partnership transfer Program (Summer 2009)
- First Place for Editorial Cartoons and General Excellence design award – Michigan Press Association

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Employment History

- Adjunct Professor** - *Saginaw Valley State University, University Center, MI* Jan – May 2015/2013
- *Instructed students on the methods and practices of general physics laboratory.*
 - *Familiarity relaying complex concepts in relatable terms for lectures and labs.*
 - *Developed course syllabus and lesson plans to align with scheduling restrictions.*
- Instructor** - *Sylvan Learning Center, Saginaw, MI* Jan 2014– Present
- Senior Outreach Tutor** - *Math Tutoring & Mentoring Program, Saginaw, MI* June 2011– August 2014
- *Collaborated with administrators to tutor underserved students across a range of subjects and grades.*
 - *Provided mentorship for diverse groups of high school students in and out of the classroom.*
- College Instructor** - *Ruben Daniels Middle School, Saginaw, MI* June – Aug 2011
- Math & Physics Tutor** - *Saginaw Valley State University, University Center, MI* Jan 2011 – June 2013
- Math/ Science Tutor** - *Delta College, University Center, MI* Sept 2007 – May 2010
- Features & Design Editor, Cartoonist** - *Delta College, University Center, MI* Sept 2007 – May 2010