

BRANDON PAUL BARRETTE

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EDUCATION

June 2012 (Anticipated)	Ph.D, Mathematics	University of California, Davis
May 2007	Bachelor of Science, Mathematics & Spanish <i>Magna cum laude</i>	University of Wisconsin-Eau Claire
Spring 2005	In Residence	University of Valladolid, Spain

RESEARCH

“Realizing Keplerian Orbits as Geodesics on a Surface of Revolution.” With Dr. Alexander Smith, Department of Mathematics, UW-Eau Claire. Spring 2006. *We address the following question: To what extent can a fixed plane be embedded as a surface of revolution S inside an abstract three-dimensional Euclidean space in such a way that Newtonian gravitational trajectories are mapped to geodesics on S ? Facts about Newtonian orbital motion along with some techniques from the differential geometry of surfaces will be used to answer the question. This method can be modified to study Schwarzschild gravitational trajectories.*

“La historia de la matemática española.” University of Valladolid, Spain. For Spanish 491, Independent Study. Spring 2005. *This composition in Spanish addresses the history of mathematical development starting shortly after the Arab conquest of the peninsula. The paper reflects on the important events in Spanish history which shaped the progress of mathematics and identifies Spain’s fitting into the international mathematical community.*

GRANTS AND AWARDS

\$12,500	National Science Foundation, Excellence in Mathematics and Computer Science Scholarship	2003-2007
\$5,100	U.S. Dept. of Education, Ronald E. McNair Postbaccalaureate Achievement Program Faculty/Student Collaborative Research Grant	2006-2007
\$1,300	Office of Research and Sponsored Programs: UWEC, Faculty/Student Research Collaboration	2006-2007
\$500	UW-Eau Claire Mathematics Department, Outstanding Achievement in Mathematics by a Junior Student Award	2006
\$1,300	Office of Research and Sponsored Programs: UWEC, Summer Research Experience for Undergraduates	2006
\$1,100	Office of Research and Sponsored Programs: UWEC, Summer Research Experience for Undergraduates	2006
\$800	UW-Eau Claire Foundation, Philip S. Zivnuska Scholarship for Sophomore Mathematics Major Engaging in Independent Research Project	2005
\$150	UW-Eau Claire Foundation, Study Abroad Scholarship	2005

PUBLICATIONS

“Computational Analysis of Orbital Motion in General Relativity and Newtonian Physics.” (with Marc Goulet, Alex Smith and P. Thomas). Keck Undergraduate Computational Science Educational Consortium, <http://oldsite.capital.edu/acad/as/csac/Keck/modules.html#orbital>.

“Visualizing Lightlike and Timelike Geodesics in the Kerr Solution.” *Astra: The UW-Eau Claire McNair Research Journal*: 7 (2007).

“**Realizing Keplerian Orbits as Geodesics on a Surface of Revolution.**” (with Alex Smith). Submitted to the American Mathematical Monthly, June 2006.

PRESENTATIONS:

Papers & Lectures

“*The Poincare Conjecture.*” 2007 Wisconsin Sectional MAA Meeting. UW-Eau Claire. April 2007.

“*Realizations of subspaces of L_p , $p > 2$, with norm given by partitions and weights.*” 2007 AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates. 2007 Joint Mathematics Meetings. New Orleans, LA. January 2007.

“*Realizing Keplerian Orbits as Geodesics on a Surface of Revolution.*” Math Monday. UW-Eau Claire Department of Mathematics. November 2006.

“*Realizing Keplerian Orbits as Geodesics on a Surface of Revolution.*” 4th Annual Seven Rivers Undergraduate Research Symposium. Viterbo University, La Crosse Wisconsin. November 2006.

“*Visualizing Timelike and Lightlike Geodesics in Black Hole Solutions.*” 15th Annual National Research Conference. Lake Lawn Resort; Delavan, Wisconsin. November 2006.

“*Visualizing Timelike and Lightlike Geodesics in Black Hole Solutions.*” UW-Eau Claire Department of Mathematics Summer Workshop 2006. UW-Eau Claire. June 2006.

“*Mathematical Solutions for Black Holes: Visualizing Timelike and Lightlike Geodesics in Black Hole Solutions.*” Physics Department Colloquium UW-Eau Claire. April 2006.

“*Visualizing Timelike and Lightlike Geodesics in Black Hole Solutions.*” Mathematics Retreat. UW-Eau Claire. April 2006.

“*Introduction to Generating Functions.*” Mathematics Retreat. UW-Eau Claire. April 2006.

“*The History of Mathematics in Spain.*” Mathematics Retreat. UW-Eau Claire. April 2006.

“*Mathematical Solutions for Black Holes.*” Mysterious Universe Course. UW-Eau Claire. March 2006.

Poster Presentations

“*Visualizing Timelike and Lightlike Geodesics in Black Hole Solutions.*” UW-Eau Claire Student Research Day. May 2006.

INSTRUCTION:

Teaching Assistant. CALCULUS. UC Davis. Fall 2007 - present. Lead discussion sections for 50-100 students every week, held office hours, and proctored and graded 2-3 exams per quarter.

Laboratory Assistant. CALCULUS II. For Dr. Don Reynolds. UW-Eau Claire. Spring 2006, Spring 2007. Engaged 23 students in advancing their understanding of calculus by integrating Maple, a computer algebra system, into their labs and providing them with the tools necessary to perform specified tasks.

Mathematics Laboratory Tutor. MATHEMATICS DEPARTMENT. UW-Eau Claire. September 2003 - present. Assisted over 300 students in the comprehension of difficult math problems and concepts from introductory mathematics courses through Calculus III.

Mathematics Tutor. ACADEMIC SKILLS CENTER. UW-Eau Claire. September 2003 - present. Tutored 30 students individually in basic mathematics skills and earned CRLA (College Reading & Learning Association) certificate for tutoring skills. Students included persons of disabilities, multicultural students, and non-traditional students.

Grader. CALCULUS I, II, III. For Dr. Alex Smith. Mathematics Department. UW-Eau Claire. January 2004 - present. Graded papers and laboratory assignments for approximately 250 students.

COMMITTEES

Member. Advisory Committee to the Dean. UW-Eau Claire. 2006-2007.

President. Kappa Mu Epsilon (KME). UW-Eau Claire. 2006 - present.

President. Mathematics Club. UW-Eau Claire. 2006 - present.

DISTINCTION AND MEMBERSHIP

American Mathematical Society. March 2006 - present

Mathematical Association of America. March 2006 - present

Golden Key International Honour Society. UW-Eau Claire Chapter. 2005 -present

Kappa Mu Epsilon Mathematics Honor Society. UW-Eau Claire Chapter. 2005 - present

National Residence Hall Honorary (NRHH). James C. Martin Chapter at UW-Eau Claire. 2005 - present

Mathematics Club. UW-Eau Claire. 2006 - present.

SERVICE

Web Designer. Mathematics Department. UW-Eau Claire. Summer 2006 - present. *Created then managed the mathematics honor society website (Kappa Mu Epsilon), math lab website, and the math club website. Use of Dreamweaver 8 and CSS based web design was necessary. Pages can be found on the math department's website at <http://www.uwec.edu/math>.*

Wisconsin Mathematics Conference Volunteer. Green Lake, WI. Spring 2006. *Managed logistical setup of conference presentations. Ensured transportation and hospitality for conference was implemented to achieve a smooth-running event.*

Speaker. Academic Skills Center. UW-Eau Claire. Fall 2004. *Presented information to prospective students about the ASC and the many opportunities it provides to the students of the university.*

Manager. UW-Eau Claire Blugold Marching Band. UW-Eau Claire. Fall 2006. *Assisted the marching band in logistics and other jobs as directed. Attendance at approximately 15 marching shows was required.*