

IVA STAVROV

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EDUCATION

Ph.D. in Mathematics, University of Oregon, Eugene, June 2003.
Dissertation, "Spectral geometry of the Riemann curvature tensor."
Advisor, Professor Peter B. Gilkey.

M.S. in Mathematics, University of Oregon, Eugene, June 2001.

B.S. in Mathematics, University of Belgrade, Yugoslavia, September 1998.

ACADEMIC POSITIONS

Visiting Scientist, Spring - Summer 2008.

Albert Einstein Institute (Max-Planck Institute for Gravitational Physics), Golm, Germany

Assistant Professor of Mathematics, Fall 2005 - present.

Department of Mathematical Sciences, Lewis and Clark College.

Visiting Assistant Professor of Mathematics, Fall 2004 - Summer 2005.

Department of Mathematical Sciences, Lewis and Clark College.

Visiting Assistant Professor of Mathematics, Summer 2004.

Department of Mathematics, University of Oregon.

Assistant Professor of Mathematics, Fall 2003 - Spring 2004.

Department of Mathematics, American University of Beirut.

Graduate Teaching Fellow, Fall 1999 - Spring 2003.

Department of Mathematics, University of Oregon.

Teaching Assistant, Fall 1998 - Summer 1999.

Department of Mathematics, University of Belgrade.

TEACHING EXPERIENCE: COURSES 1998-2008

Sole instructor except where noted.

Topology; American University of Beirut (2003), Lewis and Clark College (2007).

Geometry; Lewis and Clark College (2006, 2007).

Advanced Calculus; Lewis and Clark College (2008/2009).

Elementary Analysis; University of Oregon (2002, 2004).

Discrete Mathematics; Lewis and Clark College (2006).

Linear Algebra; Lewis and Clark College (2005).

**COURSES
1998-2008
(CONTINUED)**

Elementary Linear Algebra with Applications; American University of Beirut (2004).

Differential Equations; American University of Beirut (2004), Lewis and Clark College (2007, 2009).

Calculus and Analytic Geometry III, multivariable calculus; American University of Beirut (2003).

Calculus III, multivariable calculus; Lewis and Clark College (2004).

Calculus II, integral calculus; University of Oregon (2002), Lewis and Clark College (2004, 2005, 2008).

Calculus I, differentiable calculus; University of Oregon (2002), Lewis and Clark College (2005, 2006, 2007).

Elementary Functions; University of Oregon, (2003), Lewis and Clark College (2006).

College Algebra; University of Oregon (2000-2001).

Perspectives in Mathematics; Lewis and Clark College (2005). This was a course for liberal arts students based on “The Shape of Space” by Jeffrey Weeks.

Mathematics for Physical Chemistry; teaching assistant at University of Belgrade (1998-1999). A year long course covering elementary linear algebra, differential and integral calculus, probability.

**OTHER
TEACHING
EXPERIENCE**

I continue to **develop a modern geometry course** suitable for mathematics majors at Lewis and Clark College. I am in very early stages of writing the corresponding textbook.

I am **organizing the Putnam Problem Solving Seminar** at Lewis and Clark College.

I have **mentored independent studies in general relativity and partial differential equations** at Lewis and Clark College.

I **mentored in the John S. Rogers Science Research Program for undergraduates** at Lewis and Clark College (Summer 2006). The resulting research article is going to appear in *Differential Geometry and Its Applications*.

I was a **member of the committee for the proposal of Ph.D. program in mathematics** at the Department of Mathematics of American University of Beirut (2003 - 2004).

**RESEARCH
INTERESTS**

My research interests lie in **(semi-)Riemannian geometry and general relativity**. My Ph.D. research topic was in the spectral geometry of the Riemann curvature tensor. While I continue to follow and contribute to results in this area I am currently most interested in topics arising from general relativity, such as the **Einstein constraint equations**. Other areas of interest include **algebraic topology** and **geometries of exceptional Lie groups**.

RESEARCH
PUBLICATIONS

- [1] **(Semi)-Riemannian geometry of (para)-octonionic projective planes**, joint with Brian VanKoten and Rowena Held; to appear in *Differential Geometry and its Applications* (on archive at arxiv.org/abs/math/0702631)
 - [2] **Curvature Structure of Self-dual 4-manifolds**; joint work with Peter Gilkey, Novica Blažić and Stana Nikčević, to appear in the *International Journal of Geometrical Methods in Mathematical Physics* **5** (2008)
 - [3] **Vector Bundles over Grasmannians and the Spectral Geometry of the Riemann Tensor**; *Topology and its Applications*, **154** (2007), pages 2391-2411
 - [4] **Vector Bundles over Grasmannians and the Skew-Symmetric Curvature Operator**; *Differential Geometry and its Applications*, **23** (2005), pages 128-148
 - [5] **Jordan Szabó algebraic covariant derivative curvature tensors**, joint with Peter B. Gilkey and Raina Ivanova; *Contemporary Mathematics*, **337** (2003), pages 65-75
 - [6] **Curvature Tensors Whose Jacobi Or Szabó Operator is Nilpotent On Null Vectors**, joint with Peter B. Gilkey; *Bulletin of London Mathematical Society*, **34** (2002), pages 650-658
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ARTICLES
IN
PREPARATION

- [1] **Asymptotic gluing of asymptotically hyperbolic solutions to the Einstein constraint equations**; joint work with James Isenberg and John M. Lee (in preparation)
 - [2] **A gluing construction regarding point particles in general relativity**; (in preparation)
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RESEARCH
AWARDS

Harrison Research Award, University of Oregon, June 2000; departmental award granted for outstanding graduate research.

SELECTED
MEETINGS
AND
PRESENTATIONS

Pacific Northwest Geometry Seminar (biannual regional meetings), “*On a gluing construction regarding small bodies in general relativity*” (2008)

AMS Special Session on Riemannian and Lorentzian Geometries, Eastern Section Meeting at Wesleyan University, “*Gluing constructions in general relativity*” (2008)

Seminar Series in Mathematics and Computer Science, University of Puget Sound, “*Riemannian Geometry of the Octonionic Projective Plane*” (2006)

The Maseeh Mathematics and Statistics Colloquium Series, Portland State University, “*On Osserman Problems in Semi-Riemannian Geometry*” (2006)

**SELECTED
MEETINGS
AND
PRESENTATIONS
(CONTINUED)**

Einstein Constraint Equations, Isaac Newton Institute for Mathematical Sciences, Cambridge (2005)

Mathematics Colloquium, Pacific University, Forest Grove, OR “*Metrics, Curvature, and General Relativity*” (2005)

Seminar at the Center for Advanced Mathematical Sciences, American University of Beirut, “*Applications of Algebraic Topology to the Spectral Geometry of the Riemann Curvature Tensor*” (2003)

Art Foundations Search Committee, Lewis and Clark College (2008-2009).

Commencement Speaker Committee, Lewis and Clark College (2008-2009).

SERVICE

Institutional Grievance Committee, Lewis and Clark College (2008-2009).

Modern European History Search Committee, Lewis and Clark College (2006-2007).

Albany Week Committee, Lewis and Clark College (2006-2007). This committee coordinated some alumni events.

OTHER

I was a member of the Yugoslavian Team for the International Mathematical Olympiad, 1993.