

Curriculum Vitae

Jiří Lebl

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Education:

PhD in Mathematics, Spring 2007, University of California at San Diego
Thesis: *Singularities and Complexity in CR Geometry* Advisor: Prof. Peter Ebenfelt
MA in Mathematics, Spring 2003, San Diego State University
BA in Mathematics, Spring 2001, San Diego State University

Employment:

2007–present J. L. Doob Research Assistant Professor,
University of Illinois at Urbana-Champaign. Urbana, IL
2004–2007 Teaching Assistant in Mathematics,
University of California at San Diego. La Jolla, CA
2003 Programmer, *Red Hat, Inc.* Raleigh, NC
2002 Teaching Assistant in Mathematics,
San Diego State University. San Diego, CA
2000–2001 Programmer, *Eazel, Inc.* Mountain View, CA
1999 Programmer/Consultant, *Spyder, Inc.* San Diego, CA
1996–1998 Programmer/Consultant, *Trega, Inc.* San Diego, CA

Grants and awards:

2009–2012: PI on NSF grant DMS-0900885, *Singularities and Complexity in CR Geometry* (\$99,898).

Publications and Preprints:

- [1] Jiří Lebl and Han Peters, *Polynomials constant on a hyperplane and CR maps of hyperquadrics*, preprint arXiv:0910.2673.
- [2] Jiří Lebl, *Normal forms, Hermitian operators, and CR maps of spheres and hyperquadrics*, preprint arXiv:0906.0325.
- [3] Jiří Lebl, *Pullback of varieties by finite maps*, preprint arXiv:0812.2498.
- [4] Jiří Lebl and Daniel Lichtblau, *Uniqueness of certain polynomials constant on a hyperplane*, preprint arXiv:0808.0284.
- [5] Jiří Lebl, *Singular Levi-flat hypersurfaces in complex projective space*, preprint arXiv:0805.1763.
- [6] John P. D'Angelo and Jiří Lebl, *On the complexity of proper holomorphic mappings between balls*, *Complex Var. Elliptic Equ.*, **54** (2009), nos. 2–3, 187–204, **MR** 2513534, arXiv:0802.1739.
- [7] Jiří Lebl, *Levi-flat hypersurfaces with real analytic boundary*, to appear in *Trans. Amer. Math. Soc.*, preprint arXiv:0710.3801.
- [8] John P. D'Angelo and Jiří Lebl, *Complexity results for CR mappings between spheres*, *Internat. J. Math.*, **20** (2009), no. 2, 149–166, **MR** 2493357, arXiv:0708.3232.
- [9] Jiří Lebl, *Extension of Levi-flat hypersurfaces past CR boundaries*, *Indiana Univ. Math. J.*, **57** (2008), no. 2, 699–716, **MR** 2414332, arXiv:math.CV/0612071.
- [10] John P. D'Angelo, Jiří Lebl, and Han Peters, *Degree Estimates for Polynomials Constant on a Hyperplane*, *Michigan Math. J.* **55** (2007), no. 3, 693–713, **MR** 2372622, arXiv:math.CV/0609713.
- [11] Jiří Lebl, *Nowhere minimal CR submanifolds and Levi-flat hypersurfaces*, *J. Geom. Anal.*, **17** (2007), no. 2, 321–341, **MR** 2320166, arXiv:math.CV/0606141.

Textbooks/Notes:

Notes on Diffy Qs: Differential Equations for Engineers, 252 pages. Introductory differential equations textbook for UIUC Math 286. Available for download at <http://www.jirka.org/diffyqs/>.

Basic Analysis: Introduction to Real Analysis, 161 pages. Introductory real analysis textbook for UIUC Math 444. Available for download at <http://www.jirka.org/ra/>.

Research Interests:

My primary interests lie in *complex analysis* in general and CR geometry in particular. My research in CR geometry has also led me to study problems in real and complex algebraic geometry, discrete geometry, combinatorics, number theory, and experimental mathematics using computers. My research philosophy is not to simply solve problems within the confines of a particular area, but to look for connections with (and applications to) other areas of mathematics and computer science.

In particular, I have spent the majority of my time so far studying singularities and complexity in CR geometry. That is, studying CR manifolds and mappings between them. Two particular problems I have worked on involve the singularity structure of a singular Levi-flat hypersurface, and proper holomorphic mappings between balls and hyperquadrics. See my research statement for further information.

Favorite MSC 2000 classification numbers: 32, 14, 30.

Presentations: (only conference talks listed)

Uniqueness of certain polynomials constant on a hyperplane, Applications of Computer Algebra 2009, Montréal, Canada.

Singular Levi-flat hypersurfaces in complex projective space, Conference on Complex and CR Geometry, Partial Differential Equations and Invariant Theory in honor of Joseph J. Kohn, July 2008, Prague, Czech Rep.

Singular Levi-flat hypersurfaces in complex projective space, CIRM - CR-Geometry and PDE's - III, June 2008, Levico Terme, Italy.

Levi-flat hypersurfaces with real analytic boundary, Special session CMS meeting, December 2007, London, Canada.

Extensions of Levi-flat hypersurfaces past CR boundaries, Special session AMS meeting, October 2007, Chicago, IL.

Singularities of Levi-Flat Hypersurfaces, International Conference in PDE, Complex Analysis, and Differential Geometry, June 2006, Notre Dame, IN.

I have also given several seminar talks at UCSD, UIUC, UW-Madison, SUNY-Stony Brook, and Cal State San Marcos about my research and several complex variables in general.

I have co-organized (with John D'Angelo and Alex Tumanov) a special session at the AMS regional meeting at Urbana-Champaign on March 27-29 2009 titled *Holomorphic and CR Mappings*.

Teaching Experience:

At University of Illinois, I have taught advanced calculus (Math 380), finite mathematics (Math 124), differential equations (Math 286), matrix analysis (Math 225), and I am currently teaching real analysis (Math 444). At San Diego State University I have taught mathematics for elementary school teachers (Math 210). At University of California at San Diego I have been leading problem sections and grading for Calculus (Math 20B), Real Analysis (Math 140A, 142A, and 240A/B/C) and Complex Analysis (220A/C). I ran qualification examination preparation sessions for the Real Analysis exam at UCSD. I have written two free online textbooks. The first one on differential equations, covering material of Math 286 plus a little extra. The second one on real analysis covering the material of Math 444. Both are available for free download, see above.

Programming/Computer Experience:

I have extensive programming experience, mostly in C and C++. Other languages I have had some acquaintance with are Tcl, Perl, PHP, BASIC, Pascal, GEL, Lisp, Matlab/Octave, Maple, and others. I have been a major contributor to the GNOME project for several years (<http://www.gnome.org>), and have been employed as a programmer several times. I was a member of the GNOME steering committee and later a member of the GNOME Foundation board of directors. I have had several programming tutorials published in Linux and GNOME related publications, and have given several talks on GNOME, programming and security at GNOME and Linux conferences. I am the author and maintainer of the free software mathematics package Genius (<http://www.jirka.org/genius.html>), which includes its own programming language, GEL. I have extensive knowledge of L^AT_EX, having (apart from writing two theses, two textbooks, and several research papers) for example written the thesis style for San Diego State University mathematics department. I have contributed over 150 entries to the Planetmath (<http://planetmath.org>) encyclopedia.

Citizenship/Visa:

Citizenship: *Czech Republic*

Visa: *Permanent resident (green card)*