Alexander Russell Perlis

alexanderperlis@yahoo.com

Interests / Areas of Expertise:

- Mathematics-related interests: number theory, algebraic geometry, cryptology, coding theory, computability, complexity, and algorithms.
- Computer-related interests: communications protocols, concurrent programming, distributed computing, operating system design, generic programming, automata theory, database design, programming languages, compiler/interpreter design, and web security.
- IT-related interests: systems administration, web servers, e-mail servers, database servers, managing heterogeneous server farms, gluing open source projects into larger cohesive systems.
- Non-profit administration and public policy interests: accounting, payroll, government filings, organizational policy, consensus and other decision-making structures.

Education:

8/2004 • Ph.D., Mathematics, The University of Arizona.
Dissertation: *On the projective geometry of curves of genus one, and an algorithm for the jacobian of such a curve.*

5/1994 • M.S., Mathematics, Louisiana State University, GPA 3.9/4.0.

5/1994 • B.S., Computer Science, Louisiana State University, GPA 3.9/4.0.

8/1992 • B.S., Mathematics, Louisiana State University, GPA 3.8/4.0.

1976–1980 • Attended German elementary school, Bonn, Germany.

Foreign experience:

Summer 1994 • National Science Foundation's "Summer Institute in Japan".
I studied mathematics and japanese at Tsukuba University, Tsukuba, Japan.

9/1990–8/1991 • Louisiana State University's "Year Abroad".
I studied mathematics at Universität Bonn, Bonn, Germany.

Summer 1990 • Louisiana State University's "LSU Summer in Paris".
I studied french and art history in Paris, France.

8/1972–8/1980 • Lived in Regensburg, Germany, and Bonn, Germany.

Language skills:

- Fluent in English and German. Familiar with French.

Computer skills:

- Unix/Linux system administration, networking, protocols, web security, website development, HTML, PHP, Perl, SQL, JavaScript, C/C++, assembly, TeX/LaTeX, Mathematica, MATLAB, ...

Publications:

2012 • *Heronian tetrahedra are lattice tetrahedra*, with S. Marshall.
Submitted.

2004 • *Roots appear in quanta.*
American Mathematical Monthly **111** (2004), pages 61–63.

2001 • *Axis alignment in Xy-pic diagrams.*
TUGboat **22** (2001), pages 330–334.

2001 • *A complement to smash, llap, and rlap.*
TUGboat **22** (2001), pages 350–352.

2001 • *Jacobians of genus one curves*, with An, Kim, Marshall, Marshall, McCallum.
Journal of Number Theory **90** (2001), pages 304–315.

Awards and distinctions:

1993?	• LSU College of Basic Sciences *Outstanding Senior Award.*
4/1990	• LSU Mathematics Department *Senior Mathematics Award.*
3/1987	• LSU Alumni Scholar (annual stipend).
1/1987	• LSU Honor Scholarship (tuition exemption).

Employment history:

1/2009–12/2011	• Freelance math research, computer programming, and mostly pro bono non-profit work: administration, filings, technical support.
1/2003–12/2008	• Senior Support Systems Analyst, Department of Mathematics, The University of Arizona. Responsible for all aspects of behind-the-scenes system administration, from networking, mail servers, web servers, database servers, file servers, account management, to website development, documentation, end-user support.
1/2001–12/2002	• Research assistant, Department of Mathematics, The University of Arizona.
1/1999–12/2000	• Senior software engineer, UpShot Corporation, Mountain View, California. Responsible for improving performance of web-based sales automation product, as well as adding new features. Member of the server team; responsible for server-side design, implementation, and maintenance. Areas of specialty included HTTP protocol implementation, web security, efficient string manipulation, eliminating bottlenecks and synchronization issues in order to efficiently handle simultaneous client requests.
Summer 1996, 1997	• Unix System Administrator Assistant, Department of Mathematics, Louisiana State University.
8/1994–12/1998	• Teaching assistant, Department of Mathematics, The University of Arizona.
8/1992–6/1994	• Teaching assisant, Department of Mathematics, Louisiana State University.
1992?	• Contractor for The Dow Chemical Company, Plaquemine, Louisiana. Rewrote Macintosh software system used to prototype designs for chemical process control. Significant improvements were made to the system's compiler; the speedup was so great that the system responded "instantaneously" for all projects being prototyped.
1989?	• Self-employed software developer, Baton Rouge, Louisiana. Independently developed emulation software "ProcessTerm" for Macintosh to emulate Intecolor 8001G terminals. Many copies were subsequently sold to The Dow Chemical Corporation.
1987?	• Software developer, Communications Research Group, Inc. Baton Rouge, Louisiana. Part of team that ported the BLAST communications product to the Macintosh.

Teaching experience:

1997–1998	• High school workshops: Together with fellow graduate students, we prepared and ran weekend workshops for high school students in cryptology, signal processing, integer factorization, and primality testing.
1993–1998	• Undergraduate: I was the teacher for undergraduate courses in college algebra, finite mathematics (for business majors), calculus, vector calculus, business calculus, linear algebra.
Fall 1998?	• Graduate: I was the SuperTA for the graduate core course in geometry and topology.
1996–1997	• Graduate: I led qualifying exam preparation sessions for first-year graduate students.
Fall 1996	• Senior/Graduate: I was an assistant to the graduate course in linear algebra.
1989?–1991?	• High school classes: I was an occasional day substitute teacher in a variety of subjects, and a long-term substitute teacher in geometry, calculus, and computer science.

Talks:

7/2004	• *On computing jacobians of curves of genus one.* 10th International Conference on Applications of Computer Algebra, Beaumont, Texas.
10/2001	• *How to construct explicit jacobians of genus 1 curves.* Institute for Defense Analyses, Center for Communications Research, Princeton, New Jersey.
1/1999	• *Touchtone recognition with Fourier series*, with Aaron Ekstrom. Joint AMS/MAA Meetings, San Antonio, Texas.

12/1998 • *Explicit Jacobians of genus one curves.*
West Coast Number Theory Conference, San Francisco State University.

10/1998 • *Workshops for high school students*, with Aaron Ekstrom.
New Mexico State University, Las Cruces, New Mexico.

4/1998 • *Languages, regular expressions, grammars, automata, Turing machines.*
Graduate Colloquium, The University of Arizona.

4/1998 • *Running workshops for high school students*, with Jennifer Smith.
Regional MAA meeting, Pima Community College, Tucson, Arizona.

3/1998 • *Bounds on the order of the Tate–Shafarevich group*, with David Marshall and Susan Marshall.
Arizona Winter School, Tucson, Arizona.

10/1997 • *What are elliptic curves, and what are they good for?*
Graduate Colloquium, The University of Arizona.

10/1997 • *Fourier Series for high school students*, with Aaron Ekstrom.
SWRIMS Calculus Day Workshop, The University of Arizona.

7/1997 • *The Weil conjectures.*
REU Program at Louisiana State University.

3/1997 • *Public-key cryptography and digital signature verification.*
Graduate Colloquium, The University of Arizona.

11/1996 • *Sums of squares and the Waring problem.*
Graduate Colloquium, The University of Arizona.

1/1996 • *Continued fractions.*
Graduate Colloquium, The University of Arizona.

Fall 1995 • *The platonic solids: uniqueness and construction.*
Graduate Colloquium, The University of Arizona.

Workshops/Schools:

1/2000 • Quantum Computing Course.
Joint AMS/MAA Meeting, Washington DC.

Summer 2000 • IAS/PCMI Summer Institute on Computational Complexity.
Institute for Advanced Study, Princeton, New Jersey.

3/1999 • Local-to-Global Principles in Arithmetical Algebraic Geometry.
Arizona Winter School, Southwestern Center for Arithmetic Algebraic Geometry, Tucson, Arizona.

4/1998 • Mountain West Workshop in Algebraic Geometry.
Oklahoma State University, Stillwater, Oklahoma.

3/1998 • Workshop on Diophantine Geometry Related to the ABC Conjecture.
Arizona Winter School, Southwestern Center for Arithmetic Algebraic Geometry, Tucson, Arizona.

Departmental activities:

1/1997–5/1998 • Participant in SWRIMS (Southwest Regional Institute in the Mathematical Sciences). Programs included weekend workshops for high school students, weekly visits to high school classrooms, and development of website.

9/1996–5/1998 • Organized the Graduate Colloquium.

Spring 1998 • Organized the Graduate Elliptic Curves Seminar.

9/1996–5/1997 • Held position of Graduate Student Representative. Brought issues to the attention of the faculty and served on various departmental committees.

Community service:

02/2011–present • Board member of Frederick l'Ecole des Arts (a.k.a. Nunu's), Arnaudville, Louisiana, an umbrella arts/culture organization with a variety of monthly programs and the annual Le Feu et l'Eau (Fire and Water) showcase festival.

- 11/2010–present • Board member of Baton Rouge Progressive Network, Baton Rouge, Louisiana, building a non-profit non-commercial educational community radio station (www.whyr.org).
- 9/2005–present • Board member of non-profit BICAS, Tucson, Arizona, a community bicycle education center. Assist with accounting, tax filings, and website.
- 3/1997 • Judge at Southern Arizona Regional Science and Engineering Fair, Tucson, Arizona.
- 5/1996 • Judge at 47th International Science and Engineering Fair, Tucson, Arizona.
- 1985–1993 • Ran non-profit Louisiana Hiking Trails, Inc., an organization that encourages youth groups to become more familiar with Baton Rouge and its history, via walking tours of the downtown and university areas. Part of this effort was my Eagle Scout project.