

# Chris Lomont

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## PUBLICATIONS

- *Error Correcting Codes on Algebraic Surfaces*, in preparation.
- *The Hidden Subgroup Problem – Review and Open Problems*, in preparation, [quant-ph/0411037](http://quant-ph/0411037).
- *Angelic and Evil Numbers*, MAA Online in “Math Games” column, Oct 2004, joint with Ed Pegg, Jr.
- *Using Geometric Algebra for Computer Graphics*, to appear in Games Programming Gems V, Mar 2005, Charles River Media.
- *A Quantum Fourier Transform Algorithm*, submitted, [quant-ph/0404060](http://quant-ph/0404060).
- *Quantum Convolution and Correlation are Physically Impossible*, submitted, [quant-ph/0309070](http://quant-ph/0309070).
- *Yet More Projective Curves over  $F_2$* , Journal of Experimental Mathematics, Vol. 11, Issue 4, pp. 547-554, 2002, [math.NT/0105262](http://math.NT/0105262).

## THESIS

Thesis    *Error Correcting Codes on Algebraic Surfaces*    [math.NT/0309123](http://math.NT/0309123)  
Advisor    Professor Tzuong-Tsieng Moh    [www.math.purdue.edu/~ttm](http://www.math.purdue.edu/~ttm)

## TALKS GIVEN

- *Introduction to Quantum Computing*, IPFW Colloquium Spring 2004, and at Purdue, Fall 2004.
- *Mathematics and Insanity*, Indiana-Purdue University Fort Wayne (IPFW), for the annual alumni meeting, March 19, 2004.
- *Quantum Computing Seminar* – a series of lectures detailing quantum computing for faculty mostly from Physics, Math, and Computer Science, Fall 2003, Purdue.
- *Applications of the Quantum Fourier Transform* – two lectures delivered at the request of the Purdue Chemistry Department, Fall and Winter 2003, Purdue.
- *Mathematics for Video Game Programming*, delivered numerous times, including the Purdue Graduate Student Seminar (2000), Purdue Undergraduate Math Club (2001), Oral Roberts Math and CS Department (2001), IPFW Undergraduate Math Club (2004).
- Various talks on aspects of software development to numerous companies.

## UNPUBLISHED NOTES (at [www.lomont.org](http://www.lomont.org))

*Quantum Computing Lecture Notes.*

*A Fast Inverse Square Root.*

*Quantum Circuit Identities, [quant-ph/0307111](http://quant-ph/0307111).*

*An Elementary Proof that  $K_{3,3}$  is Nonplanar.*

*C++ Coding Standards.*

*Deriving Fast Nonlinear Gradient Fills.*

## RESEARCH INTERESTS

Quantum computing (81P68), algebraic geometry over finite fields (14J60, 14Q10), cryptography (11Txx), error correcting codes, computational commutative algebra (13Pxx), information theory (94Axx), computational complexity (68Q15), algorithms (11Yxx, 68Wxx), computer graphics (65D18).

## EDUCATION

Ph.D.	Mathematics	Purdue University	May 2003
M.S.	Mathematics	Purdue University	May 1996
Triple B.S.	Mathematics, Physics, Computer Science	Oral Roberts University	May 1991

## TEACHING EXPERIENCE

From 1995 through 2002 I taught many courses including Algebra/Trigonometry, Business Calculus, Engineering Calculus, and Mathematical Economics. I was consistently rated one of the best teachers, and won a Teaching Excellence Award in 2002.

## EMPLOYMENT

Research Scientist	Cybernet, Ann Arbor	2003 -Present
Graduate Teaching Assistant	Purdue University	1995 - 2002
Programmer (resume <a href="http://www.lomont.org">www.lomont.org</a> )	Many companies	1992 - 2002

## FELLOWSHIPS, GRANTS, HONORS

Teaching Excellence Award	April 2002
VIGRE Grant	2002-2003
Purdue Research Foundation Summer Grant	1999 - 2002
Top Putnam Exam Score Oklahoma-Arkansas section of MAA	1990

## MEETINGS ATTENDED

Quantum Algorithms for Signal, Image, and Data Processing Workshop	UCSD, San Diego, CA	Dec. 6-9, 2004
Conference for Wilkerson's 60 <sup>th</sup>	West Lafayette, IN	Oct 2004
Conference for Lipman's 65 <sup>th</sup>	West Lafayette, IN	May 2004
DARPA Quantum Information Science and Technology (QuIST) Meeting	Chicago, IL	May 4-7, 2004
QuIST Meeting	Ft. Lauderdale, FL	Nov. 11-14, 2003
QuIST Meeting	Beverly Hills, CA	June 2003
AMS Sectional Meeting	Ann Arbor, MI	March 2002
Abhyankar's 70 <sup>th</sup> Birthday Conference	West Lafayette, IN	July 2000

## OTHER EXPERIENCE

Research Scientist, Cybernet	2003 - Present
Graduate Student Representative	1998 - 1999, 2001 - 2002
Teaching Assistant Peer Mentor	1999-2003
Graduate Student Council	1999-2000
Taught advanced C++ programming	1998-1999
15 years programming experience	See resume at <a href="http://www.lomont.org">www.lomont.org</a> .

## RECOMMENDATION LETTERS WILL BE SENT BY

Professor W. Heinzer	At: Department of Mathematics
Professor T.T. Moh	150 N. University Street
Dr. R. Saerens	Purdue University
	West Lafayette, IN 47907-2067
Professor M. Hosseini	At: Department of Mathematics
	State University of New York at New Paltz
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