

Resumé
GEORGE F. BARRICK, Ph.D.

March, 2002

The Liquid Crystal Institute
Kent State University - P.O. Box 5190
Kent, OH 44242-0001
(330)672-1524
barrick@lci.kent.edu
http://www.lci.kent.edu/boslab/people/barrick_g/index.html
this document:
http://www.lci.kent.edu/boslab/people/barrick_g/resume.pdf

1156 Hampton Rd.
Kent, OH 44240-3283
(330)677-0279
gbarrick@kent.edu

TECHNICAL SKILLS

- Scientific Computation
- Liquid Crystal Optics
- Internet Publishing
- Analytical Problem Solving
- Numerical Algorithm Design/Implementation
- Teaching/Remedial Instruction
- Public Speaking

EDUCATION

- 2000 Ph.D. Applied Mathematics, Kent State University
Dissertation: "Analysis of numerical methods for one-dimensional liquid crystal display optics"
Research Supervisor: Eugene C. Gartland, Jr.
- 1983 M.S. Pure and Applied Mathematics, Kent State University

EXPERIENCE

- Research Fellow** June 2001 – present
K.S.U. Liquid Crystal Institute
Developed experiments and coded software for design of liquid crystal components in optical data transmission devices. Assisted with management of local area computer network.
- Instructor** September 1998 – May 2001
K.S.U. Mathematical Sciences Dept.
Lectured and advised students in remedial and baccalaureate courses. Wrote learning resource web-sites.
- Web Master** January 2001 – July 2001
K.S.U. Mathematical Sciences Dept.
Designed, wrote and coded web-site used to inform prospective graduate students.
See: <http://www.mcs.kent.edu/math/programs/grad/>

Graduate Assistant/Instructor September 1988 – August 1998

K.S.U. Dept. of Mathematics and Computer Science

Cuyahoga Community College - Div. of Mathematics and Technologies

Cleveland State University - Div. of Special Studies

Duties alternated between teaching and research. Investigated numerical methods for liquid crystal optics, designed algorithms and implemented software used in computational optics. Taught and tutored remedial courses in basic algebra as well as introductory statistics and calculus.

Quality Control Engineer May 1989 – August 1989

Chardon Industrial Rubber Co., Chardon OH

Consulted with fabrication and process engineers on control of industrial processes for molding, milling and hardening of rubber products.

RESEARCH ACTIVITIES

Primary Interests:

Analysis and numerical solution of differential equations arising in computational physics. Applied new numerical methods for highly oscillatory o.d.e.'s to the optics of planar anisotropic liquid crystals. Also investigating applications of liquid crystals to optical data communication systems. See my research statement: http://www.mcs.kent.edu/~gbarrick/stat_rsrch.html

Publications

- *An interpolating polynomial method for liquid crystal display optics*, submitted to Jpn. J. of Appl. Physics
- *Faster transfer matrix computation for LCD optics*, SID 2002 Digest, May 2002.
- *Analysis of numerical methods for 1-D liquid crystal optics*, K.S.U. Dissertation, December 2000.

Conference and Colloquium Presentations:

- May 2002 Society for Information Display, Boston MA.
Faster transfer matrix computation for LCD optics.
article: http://www.lci.kent.edu/boslab/people/barrick_g/pubs/t_matx.pdf
- Jul. 1998 SIAM Annual Meeting, Toronto ON Canada. *Efficient numerical approaches for highly oscillatory solutions of an o.d.e. b.v.p. system arising in liquid crystal display optics.*
slides: http://www.mcs.kent.edu/~gbarrick/articles/lc_oscill.pdf
- Apr. 1997 Graduate Student Senate Research Colloquium, Kent OH.
Numerics for line-of-sight distances.
article: http://www.mcs.kent.edu/~gbarrick/articles/lo_sight.pdf

Technical Reports

1. *A mathematical model for an exhaust oxygen sensor*, with D. Calhoun, X. Chen, B. von Dohlen, X. Huang, T. Leise, H. Lomeli, R. Michler, S. Othman, P. Worfolk and D. Baker (adviser), IMA Pre-print Series #1422 (September 1996), Institute for Mathematics and its Applications, University of Minnesota, Minneapolis MN.
2. *A mathematical model for the effects of surfactants in the production of photographic films*, with X. Chen, C. Huang, D. Kern, S. Othman, L. Smolka, C. Turner and D. Ross (adviser), IMA Pre-print Series #1422 (September 1996), Institute for Mathematics and its Applications, University of Minnesota, Minneapolis MN.

Conferences and Workshops

- Society for Information Display 2002, Boston MA
- ALCOM Symposium on Optical Beam Steering 2000, The Liquid Crystal Institute - Kent OH
- SIAM Annual Meeting 1998, University of Toronto - Toronto ON Canada
- IMA Workshop in Mathematical Modeling for Instructors and Graduate Students 1996, University of Minnesota - Minneapolis MN

PROGRAMMING SKILLS

Programming Languages	Fortran, C, C++, JAVA, Matlab, Perl
Operating Systems	HP-UX, Linux, MS Win2K
Packages and Libraries	BLAS, LAPACK, Java.net, Java.awt
Publishing	LaTeX, HTML, CSS, XML, XSLT, JavaScript

COURSE WORK

Numerical Analysis, Probability, Statistics, Numerical ODE's/PDE's, Real and Complex Analysis, Non-Linear Optimization, Object-oriented Programming.

PROFESSIONAL SOCIETIES

- Society for Information Display
- American Mathematical Society
- Society for Industrial and Applied Mathematics

REFERENCES

Prof. Philip J. Bos	K.S.U. Liquid Crystal Institute	(330)672-2511
Prof. Lothar Reichel	K.S.U. Dept. of Mathematical Sciences	(330)672-9114
Prof. Richard S. Varga	K.S.U. Dept. of Mathematical Sciences	(330)672-9053
Mr. Hugh A. Wonderly	K.S.U. Liquid Crystal Institute	(330)672-1523