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Larry Finkelstein

Education

1970 Ph.D., University of Birmingham (England), Pure Mathematics
1966, MA, University of Michigan, Mathematics
1965, BS, City College of New York (Phi Beta Kappa)

Professional experience

1993 - 2014. Northeastern University, College of Computer and
Information Science, Boston, MA, Dean.

1991 - 1993. Northeastern University, College of Computer Science,
Boston, MA, Associate Dean and Director of the Graduate School.

1989 - 1991. Northeastern University, College of Computer and
Information Science, Boston, MA, Director of Research.

1983 - present. Northeastern University, College of Computer and
Information Science, Boston, MA, Professor.

1982 - 1985. Mitre Corporation, Bedford, MA, Member Technical Staff.
Research on the design and analysis of Algorithms to solve algebraic
problems, which arise in Digital Signal Processing. (Consulting basis
from September, 1983-1985)

1981 - 1982. Institute for Defense Analyses, Communications Research
Division, Princeton, NJ, Member Technical Staff. Consulting and research on
highly classified problems relating to communications. (Member of Standby
Staff as of December, 1982.)

1970 - 1981. Wayne State University, Department of Mathematics, Detroit,
MI, Professor.

Grants and Awards

National Science Foundation Grant, "Connections to the Internet", co-
principal investigators G. Pierce and S. Reucroft, 1/1/98 - 12/31/2000
(This is for the NSF Connections Program.)

National Science Foundation, "Applications of Group Theory to Large
Scale Computation", co-principal investigator with G. Cooperman, July
1995 - November 1998.

National Science Foundation Grant, "Group Theoretic Tools and
Applications", co-principal investigator with G. Cooperman, July 1992 -
November 1995.

National Science Foundation CISE Research Instrumentation Program,
"Request for Massively Parallel Computer", co-principal investigators:
G. Cooperman, C. Hafner, R. Futrelle, R. Williams, April, 1991 -
September, 1992,

National Science Foundation Grant, "Small Scale Infrastructure Grant",

co-principal investigators C. Brown, J. Proakis, et.al., March 1991 - February 1996.

National Science Foundation Grant, "Algebraic Methods in Search", co-principal investigator with G. Cooperman, July 1989-November 1992.

National Science Foundation Grant, "Application of Group Theory to Symmetry in Backtrack Trees", co-Principal Investigator with C. A. Brown, July 1986 - November 1988.

National Science Foundation Grant, "Odd Standard Form Problems for Finite Simple Groups", Principal Investigator, July, 1978 - June 1980.

National Science Foundation Grant, "Standard Form Problems for Finite Simple Groups", Principal Investigator, July, 1976 - June 1978.

Recipient of Best Paper Award at the Mitre Corporation, 1985, for "Computing the Discrete Fourier Transform Using Residue Number Systems in a Ring of Algebraic Integers "(with J. Cozzens).

Books

Co-editor with W.M. Kantor of the "Proceedings of the DIMACS Workshop on Groups and Computation", DIMACS Series in Discrete Mathematics and Theoretical Computer Science} **28**, 1996, AMS, Providence, RI.

Co-editor with W.M. Kantor of the "Proceedings of the DIMACS Workshop on Groups and Computation", DIMACS Series in Discrete Mathematics and Theoretical Computer Science} **11**, 1993, AMS, Providence, RI.

Journal articles

"Constructive recognition of black box groups isomorphic to a perfect central extension of $PSL(n,q)$ ", with S. Bratus, G. Cooperman and S. Linton, under review

"Constructing Permutation Representations for Matrix Groups", with G. Cooperman, M. Tselman and B. York, J. Symbolic Computation, **24**, (1997), pp. 471-488.

"Backtrack Search in the Presence of Symmetry", with C.A. Brown and P.W. Purdom, Nordic Journal of Computing, **3** (1996), pp. 203-219

"Constructive Recognition of a Black Box Group Isomorphic to $GL(n,2)$ ", with G. Cooperman and S. Linton, in: Groups and Computation II (L. Finkelstein, W. M. Kantor, eds.), DIMACS Series in Discrete Mathematics and Theoretical Computer Science **28**, 1996, pp. 85-100, L. Finkelstein and W.M. Kantor (eds.), AMS, Providence, RI.

"Fast Monte Carlo Algorithms for Permutation Groups", with L. Babai, G. Cooperman, E. Luks, and A. Seress, J. of Computer Systems Science, **50**, 1995, pp. 296-308.

"Permutation Routing via Cayley graphs with an Example for Bus Interconnection Networks", with G. Cooperman, DIMACS Series in Discrete Mathematics and Theoretical Computer Science, **21**, 1994, pp.

47-56, F. Hsu, A. Rosenberg and J. Sotteau (eds.), AMS, Providence, RI.

"A Random Base Change Algorithm for Permutation Groups", with G. Cooperman, J. of Symbolic Computation, (1994) **17**, 513-528.

"Combinatorial Tools for Computational Group Theory", with G. Cooperman, DIMACS Series in Discrete Mathematics and Theoretical Computer Science **11**, 1993, pp. 53 - 86, L. Finkelstein and W.M. Kantor (eds.), AMS, Providence, RI.

"Group Membership for Groups with Primitive Orbits", with G. Cooperman and N. Sarawagi, DIMACS Series in Discrete Mathematics and Theoretical Computer Science **11**, 1993, pp. 253 -268, L. Finkelstein and W.M. Kantor (eds.), AMS, Providence, RI.

"Randomized Algorithms for Permutation Groups", with G. Cooperman, Centrum Wissenschaft Institut Quarterly (CWI), Netherlands, June 1992, pp. 107 - 125.

"New Methods for Using Cayley Graphs in Interconnection Networks", G. Cooperman and L. Finkelstein, Discrete Applied Mathematics **37/38** (special issue on Interconnection Networks), 1992, pp. 95 - 118

"Short Presentations for Permutation Groups and a Strong Generating Test.", with G. Cooperman, J. of Symbolic Computation **12** (1991), pp. 475 - 497.

"A New Base Change Algorithm For Permutation Groups", with C.A. Brown and P. W. Purdom, SIAM J. Computing, **18** (1989) pp. 1037-1047.

"Range and Error Analysis for a Fast Fourier Transform Computed over $Z[\Omega]$ ", with John Cozzens, IEEE Trans. Inform. Theory, IT-**33** (1987), no. 4, 582-590.

"Computing the Discrete Fourier Transform Using Residue Number Systems in a Ring of Algebraic Integers", with John Cozzens, IEEE Trans. Inform. Theory, IT-**31** (1985), no. 5, pp 580-589.

"Simple groups with a standard 3-component of type $SL(4,2)$ " with D. Frohardt, J. Algebra **86** (1984), 407-422.

"Simple groups with a standard 3-component of type $Sp(2n,2)$, $n > 4$, $F_4(2)$, or $E_n(2)$, $n = 6,7,8$ ", with R. Solomon, J. Algebra, **73** (1981), 70-139.

"Simple groups with a standard 3-component of type $A_n(2)$, $n > 5$ ", with D. Frohardt, Proc. Lon. Math. Soc., **43** (1981), pp. 385-424.

"Simple groups with a standard 3-component of type $Sp(6,2)$ ", with D. Frohardt, Trans. Amer. Math. Soc., **266** (1981), pp.71-92.

"A presentation for the symplectic and orthogonal groups, with R.

Solomon, J. Algebra, **60** (1979), pp. 423-438.

"Finite simple groups with a standard 3-component of type $Sp(2n,2)$, $n > 4$, with R. Solomon, J. Algebra, **59** (1979), pp. 466-480.

"A 3-local characterization of $SL(7,2)$ ", with D. Frohardt, Trans. Amer.Math. Soc., **250** (1979), pp.181-194.

"Finite groups with a standard component isomorphic to M_{12} or $.3$ ", Osaka J. Math. **16** (1979), pp. 759-774.

"Finite groups with a standard component of type J_4 , Pacific J. Math., **71** (1977), pp. 41-56.

"Finite groups with a standard component whose centralizer has cyclic Sylow 2-subgroups", Proc. Amer. Math. Soc., **62** (1977), pp. 237-241.

"Finite groups with a standard component isomorphic to M_{22} ", J.Algebra **44** (1977), pp. 558-572.

"Finite groups with a standard component isomorphic to HJ or HJM", J.Algebra, **43** (1976), pp. 61-114.

"Finite groups with a standard component isomorphic to M_{23} ", J.Algebra **40** (1976), pp. 541-555.

"Finite groups with a standard component of type Janko-Ree", J. Algebra, **36** (1975), pp. 416-427.

"Finite groups in which the centralizer of an involution is $.0$ ", J. Algebra, **32** (1974), pp. 173-177.

"The maximal subgroups of Janko's simple group of order 50,232,960", with A. Rudvalis, J. Algebra, **30** (1974), pp. 122-143.

"The maximal subgroups of Conway's group C_3 and McLaughlin's group", J. Algebra, **25** (1973), pp. 58-89.

"The maximal subgroups of the Hall-Hanko-Wales group", with A. Rudvalis, J. Algebra, **24** (1973), pp. 86-93.

**Refereed
Conference
Publications**

"Computing with Matrix Groups using Permutation Representations", with G. Cooperman and M. Tselman, Proc. of International Symposium on Symbolic and Algebraic Computation (ISSAC '95), ACM press, pp. 159-164

"Constructing Permutation Representations for Large Matrix Groups", with G. Cooperman, B. York and M. Tselman, Proc. of International Symposium on Symbolic and Algebraic Computation (ISSAC '94), ACM Press, pp. 134-138.

"A Fast Cyclic Base Change for Permutation Groups", G. Cooperman and L. Finkelstein, Proc. of International Symposium on Symbolic and

Algebraic Computation (ISSAC-92), ACM Press, pp. 224-232,

"Parallel Implementations of Group Membership and the Method of Random Subproducts", G. Cooperman, L. Finkelstein and B. York, Proc. of 1992 Dartmouth Institute for Advanced Graduate Studies in Parallel Computation Symposium (DAGS'92), D. Johnson, F. Makedon, and P. Metaxas (eds.), Department of Mathematics and Computer Science, Dartmouth College, pp. 94-100, June 17-20, 1992.

"Nearly Linear Time Algorithms for Permutation Groups with a Small Base", with L. Babai, G. Cooperman, and A. Seress, Proc. of the 1991 International Symposium on Symbolic and Algebraic Computation (ISSAC '91), Bonn, pp. 200-209, July, 1991.

"Fast Monte Carlo Algorithms for Permutation Groups", with L. Babai, G. Cooperman, E. Luks, and A. Seress, Proc. of 23rd ACM Symposium on Theory of Computer Science pp. 90-100, May, 1991.

"Applications of Cayley Graphs", with G. Cooperman and N. Sarawagi, Applied Algebra, Algebraic Algorithms and Error-Correcting Codes (AAECC-8) Springer-Verlag Lecture Notes in Computer Science 508, S. Sakata (Ed.), pp. 367-378.

"A Random Base Change Algorithm for Permutation Groups", with G. Cooperman and N. Sarawagi, Proc. of 1990 International Symposium on Symbolic and Algebraic Computation, Tokyo, Japan, pp. 161-168.

"Reduction of Group Constructions to Point Stabilizers", with G. Cooperman and E. Luks, Proc. of 1989 International Symposium on Symbolic and Algebraic Computation, Portland, Oregon, July 17-19, pp. 351-356, ACM, 1989

"Fast Group Membership using a Strong Generating Test for Permutation Groups", with G. Cooperman and P.W. Purdom, presented at Computers and Mathematics, 1989, article in Computers and Mathematics, Edited by E. Kaltofen and S. Watt, Springer Verlag, New York, 1989.

"Backtrack Searching in the Presence of Symmetry" with C.A. Brown and P.W. Purdom, 6th International Conference on Algebraic Algorithms and Error Correcting Codes (AAECC), Springer Verlag Lecture Notes in Computer Science, Vol. 357, pp. 99-110.

"Solving Permutation Problems Using Rewriting Systems", with C. Brown and G. Cooperman, Symbolic and Algebraic Computation (Proc. of International Symposium ISSAC '88, Rome, 1988), Springer Verlag Lecture Notes in Computer Science 358, pp. 364-377, 1989.

"Applying the Classification Theorem for Finite Simple Groups to Minimize Pin Count in Uniform Permutation Architectures" with D. Kleitman and F.T. Leighton, 3rd International Workshop on Parallel Computation and VLSI Theory, (AWOCS), Springer Verlag Lecture Notes in Computer Science. J.H. Reif, ed, Vol. 319, pp. 247-256.

"Intelligent Backtracking Using Symmetry", with C.A. Brown and P.W.

Purdom, article in the Proceedings of the Fall Joint Computer Computer Conference sponsored by IEEE Computer Society and the ACM, Fall 1986, 576-584.

"Open standard form problems", an article in the Proceedings of the American Mathematics Society Summer Institute on Finite Groups, Santa Cruz, 1979, 99-102.

Technical reports

"Residue Number System Processing for Discrete Fourier Transforms", with J. Cozzens, Mitre Corporation MTR 8985, August 1983

Several Classified Working Papers at the Institute for Defense Analyses, Communications Research Division, Princeton, New Jersey, 1981-1982.

Invited talks

"Masters of Science in Health Informatics", with S. Hochberg and S. Zoloth, Computing Research Association IT Dean's Meeting, Redmond, WA, July 2007

"Restructuring Academic Programs for a Global Based Knowledge Economy", Computing Research Association Conference at Snowbird, 2004, <http://www.cra.org/Activities/snowbird/2004/slides/finkelstein.pdf>

"The Evolving Discipline(s) of IT (and their relation to computer science): A Framework for Discussion", with C. Hafner, Computing Research Association IT Dean's Meeting, February, 2002, <http://www.cra.org/Activities/itdeans/finkelstein.pdf>

"Experiences at Northeastern University Connecting to a High Performance National Network", Workshop on High Performance Computation and Gigabit Local Area Networks", Institut für Experimentelle Mathematik, University of Essen, Germany, August 30, 1998 (delivered by Gene Cooperman)

"Constructive recognition of black box groups isomorphic to a perfect central extension of $PSL(n,q)$ ", Seminar on Computational Group Theory, Mathematisches Forschungsinstitut, Oberwolfach, Germany, June, 1-5, 1997

"Application of the Classification of Finite Simple Groups to Group Computations", Special Session on Simple Group Classification: 2nd Generation Proof and Applications, held at the Annual Meeting of the American Mathematics Society, Jan. 5. 1995.

"Constructing Permutation Representations for Matrix Groups", Institut für Experimentelle Mathematik, University of Essen, Germany, July 18, 1994.

"Combinatorial Methods for Computational Group Theory", Dartmouth College Colloquium, March 4, 1993.

"Cyclic Base Change Algorithms for Permutation Groups", Seminar on Computational Group Theory, Mathematisches Forschungsinstitut, Oberwolfach, Germany, June, 8-12, 1992

``New Tools for Computational Group Theory'', DIMACS Workshop on Groups and Computation, Rutgers University, October 8, 1991. ``Short Presentations and a Strong Generating Test for Permutation Groups'', Special Session on Computational Group Theory held at the Annual Meeting of the American Mathematics Society, Jan. 1989.

``New Algorithms for Permutation Groups'', Seminar on Computational Group Theory, Mathematisches Forschungsinstitut, Oberwolfach, West Germany, May 14-21, 1988.

``Fundamental Algorithms for Permutation Groups'', Special Session on Implementation of Algorithms for Discrete Mathematics at the Nineteenth Southeastern International Conference on Combinatorics, Graph Theory and Computing, held at Baton Rouge, Feb. 15-18, 1988.

``Symmetry and Search'', Computer Science Colloquium, University of Oregon, October 1987.

``Computing the Discrete Fourier Transform using Residue Number Systems in a Ring of Algebraic Integers'', National Radio Science Meeting, Boulder, Colorado, January, 1986.

``Computing the Discrete Fourier Transform using Residue Number Systems in a Ring of Algebraic Integers'', Kresge Institute, La Jolla, CA, July 1983.

``Simple groups with a standard 3-component of type $Sp(6,2)$ '', Institute for Advanced Study, Princeton, NJ, March 1979.

``Finite groups with a standard 2-component of sporadic type'', London Math. Soc. Inst. on Simple Groups, Durham, England, August, 1978.

``Simple groups with a standard 3-component of type $Sp(6,2)$ '', California Institute of Technology, Pasadena, CA, March, 1978.

``Simple groups with a standard 3-component'', Midwest Group Theory Conference, Ann Arbor, MI, November, 1977.

``Classification of finite simple groups'', University of Oregon Colloquium, Eugene, OR, June, 1977.

``Standard 3-components of type $A_n(2)$ '', Ohio State University, Columbus, OH, May 1977.

``Finite groups with a standard component isomorphic to a sporadic simple group'', NSF Conference on Finite Simple Groups, Duluth, MN, August, 1976.

``Characterization of some sporadic simple groups'', Rutgers University, New Brunswick, NJ, February, 1975.

``Maximal subgroups of finite simple groups'', University of California, Berkeley, Berkeley, CA, August, 1973.

``Maximal subgroups of the Higman Janko McKay Group'', presented by

coauthor A. Rudvalis, University of Chicago, Chicago, IL, June, 1972.