

PETER B. PERCELL, Research Professor

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Dr. Peter Percell is currently a research professor in the Department of Geosciences, University of Houston (UH). During a nearly twenty year break from academia, he was a technical leader in the design, development and application of modeling, simulation and optimization software products for pipeline systems in private industry. Before that he was on the mathematics faculty of several major universities, the last of which was the University of Houston. During this period, he also held various short-term consulting and research positions at diverse institutions including Argonne National Laboratory and Exxon Production Research Company. His undergraduate and graduate education was all in mathematics at the University of California at Berkeley, culminating with a PhD in Mathematics in 1973.

Dr. Percell is currently involved in several air quality modeling projects with the goal of investigating various approaches to enhancing the simulation of transport processes. This is a continuation, with an interesting change of direction, of his extensive previous experience in the development of scientific software for the simulation of fluid flow through pipeline networks.

Areas of Experience

Air pollution modeling

Numerical algorithms for atmospheric transport solvers

Pipeline hydraulics, simulation & optimization

Numerical solution of partial differential equations

Nonlinear constrained optimization

Numerical linear algebra - sparse matrix methods

Software engineering for scientific simulators

Differential topology

Education

Ph.D. Mathematics, 1973, University of California at Berkeley

M.A. Mathematics, 1967, University of California at Berkeley

B.A. Mathematics, 1965, University of California at Berkeley

Professional Experience

Research Professor, Geosciences, University of Houston, 2004 - Present

Consultant, Multiphase Solutions, Inc., 2003

Research Professor, Mathematics, University of Houston, 2002 - 2003

Principal Engineer (Pipeline Engineering), Fluor Corporation, 2001 - 2002

Lead Research Scientist, Stoner Associates, 1992 - 2001

Senior Research Associate, Scientific Software-Intercomp, 1982 - 1992

Associate Professor, Mathematics, University of Houston, 1980 - 1984

Visiting Assistant Professor, Mathematics, University of California at San Diego, 1979 - 1980

Assistant Professor, Mathematics, University of Houston, 1976 - 1980

Research Associate, Mathematics, University of Chicago, 1974 - 1976

Assistant Professor, Mathematics, Purdue University, 1972 - 1974

Instructor, Mathematics, University of Chicago, 1970 - 1972

Awards and Honors

1966 - 1970 National Science Foundation Graduate Fellowship

1965 Phi Beta Kappa

Achievements

Significant mathematical and engineering contributions to pipeline simulation software products including the Stoner Pipeline Simulator (at Stoner Associates) and TGNET (at Scientific Software-Intercomp)

Professional Associations

Society for Industrial and Applied Mathematics

Selected Recent Publications

Byun, Daewon, Peter Percell, Tanmay Basak. 2005: Application of Static Adaptive Grid Techniques for Regional-Urban Multiscale Air Quality Modeling. ICCS (2), 814-821

Selected Earlier Publications

- H.S. Lall and P.B. Percell, "A Dynamic Programming Based Gas Pipeline Optimizer," Analysis and Optimization of Systems - Proceedings of the 9th International Conference Antibes, June 12-15, 1990, eds. A. Bensoussan and J.L. Lions, (Lecture Notes in Control and Information Sciences Volume 144), Springer-Verlag, Berlin, Heidelberg, 1990.
- P.B. Percell and J.D. Van Reet, "A Compressor Station Optimizer for Planning Gas Pipeline Operation," Pipeline Engineering Symposium - 1990, ed. H.G. Oliver, Thirteenth Annual Energy-Sources Technology Conference and Exhibition, American Society of Mechanical Engineers, New Orleans, Louisiana, January 14-18, 1990.
- P.B. Percell and M.J. Ryan, "Steady-State Optimization of Gas Pipeline Network

- Operation," Pipeline Simulation Interest Group Annual Meeting, Tulsa, Oklahoma, October 22-23, 1987.
- P.B. Percell and P.N. Brown, "Finite Determination of Bifurcation Problems," SIAM Journal on Mathematical Analysis, Vol. 16 (1985), pp. 28-46.
 - P.B. Percell, "A Study of Viscous Fingering," Internal Project Report, Exxon Production Research
 - P. Percell and M.F. Wheeler, "A C1 Finite Element Collocation Method for Elliptic Equations," SIAM Journal on Numerical Analysis, Vol. 17 (1980), pp. 605-622.
 - J. Douglas, Jr., T. Dupont, and P. Percell, "A Time-Stepping Method for Galerkin Approximations for Nonlinear Parabolic Equations," Numerical Analysis - Proceedings, Biennial Conference Dundee, 1977, ed. G.A. Watson, (Lecture Notes in Mathematics Volume 630), Springer-Verlag, New York, 1978.
 - P. Percell and M.F. Wheeler, "A Local Residual Finite Element Procedure for Elliptic Equations," SIAM Journal on Numerical Analysis, Vol. 15 (1978), pp. 705-714.
 - P. Percell, "Presentations of 3-Manifolds Arising from Vector Fields," Transactions of the American Mathematical Society, Vol. 221 (1976), pp. 361-377.
 - P. Percell, "The Genus of an Abstract Intersection Sequence," Proceedings of the American Mathematical Society, Vol. 55 (1976), pp. 217-220.
 - P.B. Percell, "Structural Stability on Manifolds with Boundary," Topology, Vol. 12 (1973), pp. 123-144.
 - L.E. Sacks, P.B. Percell, R.S. Thomas, and G.F. Bailey, "Kinetics of Dry Rupture of Bacterial Spores in the Presence of Salt," Journal of Bacteriology, Vol. 87

(1964), pp. 952-960.