

## KRIS STEWART

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### A. SUMMARY

Dr. Kris Stewart is Associate Professor of Mathematical and Computer Sciences for SDSU and the Director of the Education Center on Computational Science and Engineering, a National Partnership for Advanced Computing Infrastructure (NPACI) activity for the California State University System. The NPACI is one of only two NSF supported High Performance Computing Partnerships, with the mission to establish and maintain the national metacomputing environment. Stewart's research and graduate student supervision is in the areas of numerical methods, supercomputing and software development. As an educator, she develops curricula and teaches courses in Computational Science at the undergraduate level.

She has been a Senior Fellow, since 1993, with the San Diego Supercomputer Center (SDSC), now the Leading Edge Site of the NPACI. She participated in the writing of the NPACI proposal and coordinated the participation of the CSU Chancellors Office (Tom West) and the SDSU Office of Academic Affairs (Ethan Singer) in NPACI education and outreach activity. The mission of the Ed Center, led by Stewart, is to foster the incorporation of High Performance Computing research tools for scientific investigation into the undergraduate curriculum. She represented SDSU on the SDSC Steering Committee from 1992-1997 and pioneered web-based instruction and research at SDSU since 1993.

Prior to pursuing her PhD, Stewart worked at the Jet Propulsion Laboratory in Pasadena from 1979-1981 and maintains contacts with research colleagues there. While pursuing her PhD in New Mexico, she worked as a research consultant with the Los Alamos National Laboratory.

### B. AWARDS AND HONORS

Medal recipient, ComputerWorld/Smithsonian Award in Information Technology, June 3, 1996;  
Supercomputer Teacher Enhancement Program approved for inclusion in permanent research collection of the Smithsonian Institution from <[innovate.si.edu/1996/96short/96ea27s.htm](http://innovate.si.edu/1996/96short/96ea27s.htm)>

Invited panelist, "High-performance Computing and Communications in Research and Education" at Seminars on Academic Computing (Tough Choices/Radical Opportunities), Snowmass, Co. August 8, 1995 (with Bob Borchers and Priscilla Huston, NSF)

Invited panel organizer and participant, "Education Issues in Scientific Computing," SciCADE95

Undergraduate Computational Science Award from Department of Energy, September 1994

SDSEA Outstanding Contributions to Science Education Award (university level), 1994

Participant in Society for Industrial and Applied Mathematics (SIAM) Visiting Lecturer Program since 1992

### C. GRANTS

Institutional-PI for SDSU and the CSU for the NSF National Partnerships for Advanced Computing Infrastructure (NPACI) grant, October 1, 1997 (5 year grant to UCSD).

"Curriculum Development in Advanced Computing" (Dan Sulzbach, SDSC-PI), NSF supplement grant, 1990-1992

NSF Grant "Time Discretization Schemes for Incompressible Navier-Stokes Equations," Co-PI with T. Geveci, 1987-1989

#### **D. RELATED PUBLICATIONS**

Stewart, K. and Zaslavsky, I., "Building the Infrastructure for High Performance Computing in Undergraduate Curricula: Ten Grand Challenges and the response of the NPACI Education Center, IEEE/ACM SC98 Conference, Orlando FL, November 1998.

STEP: A Case Study on Building a Bridge between HPC Technologies and the Secondary Classroom, K. Stewart and J. Bowers, SC97 Education Program, San Jose, CA, November 1997 (available from [www.supercomp.org/sc97/program/EDU/STEWART/INDEX.HTM](http://www.supercomp.org/sc97/program/EDU/STEWART/INDEX.HTM)).

HPC Undergraduate Curriculum Development at San Diego State University using San Diego Supercomputer Center Resources, Supercomputing '95, San Diego, CA, December 1995 (available from [www.supercomp.org/sc95/proceedings/704\\_KSTEW/SC95.HTM](http://www.supercomp.org/sc95/proceedings/704_KSTEW/SC95.HTM)).

Geveci, T., and Stewart, K., Numerical experiments with a nonlinear evolution equation which exhibits blow-up, Applied Numerical Mathematics, 10, pp. 139-147, 1992.

Stewart, K., A model for stability of the semi-implicit backward differentiation formulas, J. Computational and Applied Mathematics, 33, pp. 245-259, November 1990.

Stewart, K., Avoiding stability-induced inefficiencies in BDF methods, J. Computational and Applied Mathematics, 29, pp. 357-367, 1990.

Long, D.D.E., Carroll, J.L., and Stewart, K., The reliability of regeneration-based replica control protocols, IEEE Transactions on Computers, Special Issue on Computer System Performance, 38, no. 12, pp. 691-1702, December 1989.

#### **OTHER RELEVANT PUBLICATIONS**

Krogh, F.T., and Stewart, K., Asymptotic absolute stability for BDFs applied to stiff differential equations, ACM Transactions on Mathematical Software, 10, pp. 45-57, 1984.

#### **E. COLLABORATORS**

Richard Tapia, Rice University

Roscoe Giles, Boston University

Ilya Zaslavsky, EC/CSE, SDSU

J. Foertsch, LEAD Center, U. Wisconsin

Janet Bowers, SDSU

Eric Frost, SDSU

Hal Cox, Hoover High School

Yusuf Ozturk, SDSU

#### **F. GRADUATE STUDENTS**

Spydell, A.      Ferguson, M.      Haas, E.      Keller, J.      Larson, B.

McCoy, R.A.      Morris, R.      Reichelt, E.      Richards, J.      Shamblin, G.

Total supervised:

10

POSTDOCTORAL ADVISOR: R.C. Allen