

## KOUNG HEE LEEM

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### RESEARCH INTERESTS

Numerical Analysis, Parallel Computation, Applied Mathematics

### EDUCATION

**Ph.D.** in Applied Mathematical and Computational Sciences, University of Iowa, August 1, 2003

Thesis: Solving Linear Systems for Meshfree Discretizations

Advisor: Professor Suely Oliveira and Professor David Stewart

Comprehensive exam areas: Parallel Algorithms & High Performance Computing,  
Partial Differential Equations, and Analysis.

**M.S.** in Mathematics, Yeungnam University, South Korea, 1995

**B.S.** in Mathematics Education, Yeungnam University, South Korea, 1993

### TEACHING EXPERIENCE

#### Assistant Professor

Southern Illinois University Edwardsville

August 2003 - present,

Now teaching Numerical Linear Algebra with Applications and Advanced Calculus for Engineers.  
Taught Real Analysis I and Calculus I.

#### Graduate Teaching Assistant

University of Iowa

August 2002 - May 2003, August 1999 - May 2000,

Taught Basic Algebra II as the principal instructor. Taught discussion sections for Business Calculus. Assisted with computer laboratory experiments and graded homework for the high performance computing course. Graded for graduate courses in Partial Differential Equations and Set Theory and for undergraduate courses in Numerical Analysis, Linear Algebra, Matrix Algebra, and Calculus.

#### Mathematics Tutorial Laboratory Assistant

University of Iowa

August 1997 - May 1998

Helped students solve various Calculus problems. Improved and managed the website and software on the PCs (Windows, MacIntosh) in the mathematics tutorial laboratory. Made problem sheets for various Calculus courses.

#### Instructor

Changwon National University, South Korea

August 1995 - June 1996

Taught Differential Equations, Mathematical Logic, Statistics and Calculus as the principal instructor.

### RESEARCH EXPERIENCE

#### Graduate Research Assistant

University of Iowa

Jan 2000 - May 2002

Numerical experiments for the linear systems for meshfree discretizations.

Applied various preconditioned Krylov subspace methods and performed parallel experiments using PETSc

software. Found a fast parallelized Krylov subspace method for Radiosity Equations.

### HONORS AND AWARDS

- Summer Research Fellowship, Southern Illinois University, summer 2004.
- Summer Merit Fellowship, University of Iowa, 2003, 2002.
- Tuition scholarships, University of Iowa, 2000, 1999.
- Freshman Scholarship, Yeungnam University, 1989.

### WORKSHOP PARTICIPATION

- IMA Summer Graduate Program on “Scientific Computing”, Center for Scientific Computing, University of Kentucky, June 9-27, 2002.
- IMA Career Workshop on “Connecting Women in Mathematical Sciences to Industry”, IMA, University of Minnesota, Sept 8-10, 2000.
- Mathematica Summer Workshop, University of Iowa, June 2000.

### PRESENTATIONS

- K. H. Leem, S. Oliveira, and D. E. Stewart, presentation on “Algebraic Multigrid (AMG) for indefinite linear systems from meshfree discretizations”, at Kyungpook National University, Jan 5, 2004.
- K. H. Leem, S. Oliveira, and D. E. Stewart, presentation on “meshfree discretizations for Partial Differential Equations”, at Yeungnam National University, Dec 29, 2003.
- K. H. Leem, S. Oliveira, and D. E. Stewart, presentation on “Algebraic Multigrid (AMG) for indefinite linear systems from meshfree discretizations”, at eleventh Copper Mountain Conference on Multigrid, Copper Mountain, Co, April 2, 2003.
- K. H. Leem, presentation on “Solving Linear Systems for Meshfree Discretizations”, in AMCS Seminar, University of Iowa, November 2002.
- K. H. Leem, presentation on “Direct vs Iterative Methods”, in Numerical Analysis Seminar, University of Iowa, 2001.
- K. H. Leem, S. Oliveira, T. Soma and D. E. Stewart, presentation on “Linear Solvers for Meshfree Discretizations”, at third DARPA/NSF Optimized Portable Algorithms and Application Libraries (OPAAL) workshop, Rosemont, IL, May 2000.

### PUBLICATIONS

- *Algebraic Multigrid (AMG) for saddle point systems from Meshfree Methods*, (with S. Oliveira and D. E. Stewart), To be appear in Numerical Linear Algebra with Applications.
- *Some numerical results from meshless linear systems*, (with S. Oliveira and D. E. Stewart), Tech. Report, University of Iowa, Sept 2001.
- *A fast parallel Krylov subspace method for the radiosity equation*, (with D. Chien, and S. Oliveira), Tech. Report, University of Iowa, Jan 2000.
- *Common fixed point theorems relating to the diameter of orbits*, (with K. Kim, T. Kim, and J. Ume), Math. Japon. 47 (1998), no 1, p103–108.
- *Notes on common fixed point theorems in metric spaces*, (with K. Kim), Commun. Korean Math. Soc. 11 (1996) no 1, p109–115.

### COMPUTER EXPERIENCE

Programming experience in C, C++, FORTRAN 77 and 90. Parallel programming with MPI. Mathematica, MATLAB using UNIX and Windows operating systems. Experience with HTML and LaTeX.

### PROFESSIONAL MEMBERSHIPS

Society for Industrial and Applied Mathematics (SIAM),  
American Mathematical Society (AMS), Association for Women in Mathematics (AWM).