



IMAGE



Serving the International Linear Algebra Community
Issue Number 39, pp. 1-32, Fall 2007

Editor-in-Chief: Jane M. Day
day@math.sjsu.edu
Department of Mathematics
San Jose State University
San Jose, CA 95192-0103

Editor-in-Chief: Hans Joachim Werner
hjw.de@uni-bonn.de
Department of Statistics
Faculty of Economics, University of Bonn
Adenauerallee 24-42, D-53113 Bonn, Germany

Associate Editors: Oskar Maria Baksalary, Steven J. Leon, Peter Šemrl and James Weaver

Past Editors-in-Chief: Robert C. Thompson (1988); Jane M. Day & R.C. Thompson (1989);
Steven J. Leon & R.C. Thompson (1989-1993); Steven J. Leon (1993-1994); Steven J. Leon & George P.H. Styan (1994-1997);
George P.H. Styan (1997-2000); George P.H. Styan & Hans J. Werner (2000-2003); Bryan Shader & Hans J. Werner (2003-2006)

Conferences and Workshops

| | |
|--|---|
| Report on ILAS07, Shanghai, P.R. China, July 16-20, 2007..... | 2 |
| ILAS08, Cancun, Mexico, June 16-20, 2008..... | 5 |
| Applied Linear Algebra Conference in Honor of Ivo Marek, Novi Sad, Serbia, April 28-30, 2008 | 5 |
| Fifth Linear Algebra Workshop, Kranjska Gora, Slovenia, May 27-June 5, 2008 | 6 |
| Western Canada Linear Algebra Meeting, Winnipeg, Canada, May 30-31, 2008 | 6 |
| IMA Program for Graduate Students on Linear Algebra and Applications, Ames, Iowa, June 30-July 25, 2008 | 6 |
| Ninth Workshop on Numerical Ranges and Numerical Radii, Williamsburg, Virginia, July 19-21, 2008 | 6 |
| SIAG/LA-SIMUMAT International Summer School on Numerical Linear Algebra, Castro Urdiales, Spain, July 21-25, 2008 | 8 |
| Workshop on Operator Theory and Applications, Williamsburg, Virginia, July 22-26, 2008 | 8 |
| The 17th International Workshop on Matrices and Statistics, Tomar, Portugal, July 23-26, 2008 | 8 |
| Robert C. Thompson Matrix Meeting, University of California at Santa Barbara, Goleta, California, October 18, 2008 | 8 |

News

| | |
|---|----|
| AIM Research Center Groundbreaking | 9 |
| Call for News for <i>IMAGE</i> | 9 |
| In Memoriam..... | 9 |
| First Olga Taussky Todd Lecturer at ICIAM: Pauline van den Driessche..... | 9 |
| New Manager for the ILAS Information Center (IIC)..... | 11 |
| Call for Papers: Special Issue of LAA in Honor of Thomas J. Laffey | 11 |

Articles and Resources

| | |
|---|----|
| Classroom Voting in Linear Algebra..... | 11 |
| Research with Premathematicians: REU Programs at The College of William and Mary..... | 13 |
| Your NSF Mathematical Sciences Institutes | 17 |
| What is an Enigmatrician?..... | 19 |

IMAGE Problem Corner: Old Problems, Most With Solutions

| | |
|--|----|
| Problem 30-3: Singularity of a Toeplitz Matrix..... | 20 |
| Problem 32-4: A Property in $\mathbb{R}^{3 \times 3}$ | 22 |
| Problem 36-3: Transformations of (Skew)-Idempotent and (Skew-) Involutory Matrices..... | 23 |
| Problem 37-1: Another Property for the Sum of a Matrix A and its Moore-Penrose Inverse A^\dagger | 23 |
| Problem 37-2: Rank of a Generalized Projector..... | 25 |
| Problem 37-3: Rank of a Nonnegative Definite Matrix..... | 27 |
| Problem 37-4: Do Singular Values Dominate Eigenvalues?..... | 28 |
| Problem 37-5: A Generalised Matrix Transformation..... | 28 |
| Problem 37-6: Characterization of EP-ness..... | 30 |

IMAGE Problem Corner: New Problems

| | |
|---|----|
| Problem 39-1: A Simple Procedure for a Generalised Matrix Transformation..... | 32 |
| Problem 39-2: On the Range of $A^\dagger A^*$ | 32 |
| Problem 39-3: An Inequality Involving the Khatri-Rao Sum of Positive Definite Matrices..... | 32 |
| Problem 39-4: On (α, β) -normal Operators in Hilbert Spaces..... | 31 |
| Problem 39-5: Two Commutativity Equalities for the Regularized Tikhonov Inverse..... | 31 |
| Problem 39-6: Two Equalities for the Moore-Penrose Inverse of a Row Block Matrix..... | 31 |