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The Bulletin of the International Linear Algebra Society

Serving the International Linear Algebra Community
Edited by S.J. Leon and R.C. Thompson

Issue 3   July 1989

ILAS INAUGURAL CONFERENCE

The International Linear Algebra Society (ILAS) Inaugural Conference will be held August 12–15, 1989, at Brigham Young University in Provo, Utah, USA. This will be a general international meeting open to all with an interest in matrix theory. There will be special concentration on nonnegative matrices and related topics.

Speakers and talks

Because of the large number of talks it has been necessary to limit the longer talks to 30 minutes and the contributed papers to 15 minutes. The following list of speakers may not be complete. (This issue is going to press before the July 1 deadline for submission of abstracts).

T. ANDO, Hokkaido University, Japan; **Y.H. AU-YEUNG**, University of Hong Kong; **R.B. BAPAT**, Indian Statistical Institute, New Delhi; **HARM BART**, Erasmus University Rotterdam, Netherlands; **LEROY B. BEASLEY**, Utah State University; **ABRAHAM BERMAN**, Technion-Israel Institute of Technology, Haifa; **JEAN H. BEVIS**, Georgia State University; **RAJENDRA BHATIA**, Indian Statistical Institute, New Delhi; **R. BRU**, Spain; **RICHARD A. BRUALDI**, University of Wisconsin: **DAVID H. CARLSON**, San Diego State University, California; **YAIR CENSOR**, Israel; **BISWA NATH DATTA**, Northern Illinois University; **RALPH DEMARR**, University of New Mexico; **ROBERT ELLIS**, University of Maryland; **CAROLYN ESCHENBACH**, Georgia State University; **SHMUEL FRIEDLAND**, University of Illinois at Chicago; **ISRAEL GOHBERG**, Tel Aviv University, Israel; **MOSHE GOLDBERG**, Technion-Israel Institute of Technology, Haifa; **GENE H. GOLUB**, Stanford University, California; **ROBERT D. GRONE**, San Diego State University, California; **THOMAS LAFFEY**, University College, Dublin, Ireland; **PETER LANCASTER**, University of Calgary, Alberta; **STEVEN J. LEON**, Southeastern Massachusetts University; **CHI-KWONG LI**, College of William & Mary, Virginia; **RAPHAEL LOEWY**, N. Carolina State University;

MICHAEL LUNDQUIST, College of William and Mary, Virginia; MARVIN MAR-CUS, University of California at Santa Barbara; ROY MATHIAS, Johns Hopkins University, Maryland; JOHN S. MAYBEE, University of Colorado; VOLKER MEHRMANN, University of Bielefeld, Germany; JORMA KARLO MERIKOSKI, University of Tampere, Finland; RUSSELL L. MERRIS, California State University; CARL D. MEYER, North Carolina State University; PETER NYLEN, Clemson University, South Carolina; KAZUYOSHI OKUBO, Hokkaido University, Japan; D. DALE OLESKY, University of Victoria, British Columbia; STEVE PIERCE, San Diego State University, California; ROLAND PUYSTJENS, Seminarie voor Algebra in Functionaalanalyse, Belgium; JOAO FILIPE QUEIRO, Universidada de Coimbra, Portugal; A.C.M. RAN, Faculteit Wiskunde en Infomatica, Amsterdam, The Netherlands; LEIBA RODMAN, College of William and Mary, Virginia; PÁL RÓZSA, Technical University of Budapest, Hungary; HANS SCHNEIDER, University of Wisconsin; ERIK SCHREINER, Western Michigan University; DANIEL SCULLY, St. Cloud State University, Minnesota; FERNANDO C. SILVA, Faculdade de Ciencias de Lisboa, Portugal; J.A. DIAS DA SILVA, Universidade de Lisboa, Portugal; DIRK SLOCK, Stanford University, California; RON STERN, Concordia University, Montreal, Quebec; JEFF STUART, University of Southern Mississippi; BIT-SHUN TAM, Tamkang University, Taiwan; OLGA TAUSSKY-TODD, California Institute of Technology; NAM-KIU TSING, University of Maryland, FRANK UHLIG, Auburn University, Alabama; H.J. WERNER, University of Bonn, Germany; H.J.WOERDEMAN, Vrye Universiteit, Amsterdam, The Netherlands; ION ZABALIA, Facultad de Farmacia, Spain

Accommodations, meals and transportation

Accommodation is available for up to 5 nights (Aug. 11/12 through 15/16) in on-campus dormitories and a meal plan is available in an on-campus cafeteria on Aug. 12,14,15 (the meal plan includes no meals on Sunday). The joint cost of accommodation and meals is $74.90 double occupancy (you may wish to select your roommate). Alternatively accommodation and meals may be purchased separately. The cost of a dormitory room is $10 per night double occupancy. For those wishing to stay off campus, the 3-day meal package is $31.20, or for the same package excluding breakfast $23.25. Single meals may also be purchased at the cafeteria.

Attendees desiring dormitory rooms should apply as soon as possible as there are not that many left. Those preferring single occupancy should so indicate on the housing form. Requests for single occupancy will be granted later if space is available.

On-campus accomodation and meals are of high quality for an academic institution. Please note that some regulations of religious origin govern residence in BYU dormitories, such as prohibition of alcoholic beverages and smoking. Coffee or tea are not served on campus.

Lodging and meals are available off-campus within walking distance. Please indicate on the registration form if you would like information on off-campus housing.

Provo is located about 50 miles south of Salt Lake City. Salt Lake International Airport

is well serviced by most major US airlines, and reasonably priced limousine service is readily available to and from Provo (information will be sent to those who register). Salt Lake City is also serviced by Amtrak. Within easy driving distance from Provo (less than one day) lie many of the spectacular attractions of the Rocky Mountain West. In addition to Yellowstone, the Grand Canyon, Bryce Canyon and Zion Parks there are a host of lesser known but also enjoyable parks.

The program schedule and activities

The program for the conference and local information will be available Friday night, August 11, from 5–10 PM at the Morris Center on the BYU campus. The conference will begin Saturday morning at 8:30 AM. On Saturday, Monday, and Tuesday, the conference will convene in the Tanner building on the BYU campus and there will be a full schedule of talks each day.

On Sunday morning the meeting will be held at Sundance, a resort in the mountains a half-hour drive from the university. There will be a half day of talks from 9:30 am – 1:00 pm, followed by a luncheon buffet. Cost of the luncheon buffet is $15. The remainder of the afternoon will be free for talking mathematics and strolling in the mountains. If you have not signed up for the luncheon, but would like to attend please let either Wayne Barrett or Jim Weaver know. They need an accurate count one week before the meeting begins.

There will be an open-house for all participants and their families on Saturday night at the home of Don Robinson, a short walk from the university.

Special issue

A special issue of Linear Algebra and its Applications will be devoted to the meeting. This issue will contain only papers that meet the publication standards of the journal and are approved through the normal refereeing procedure. Papers should be submitted in triplicate by November 1989 to one of the special editors of this issue, who are Wayne Barrett, Daniel Hershkowitz, and Donald Robinson.

Registration

Those planning to attend should return the registration form included in this issue to James R. Weaver (ILAS treasurer), and the enclosed housing/meal plan form to the Office of General Services at Brigham Young University. If you need further information, please contact Wayne Barrett (mailing address on registration form, or email address: barrettw@byuvax.bitnet).

Organizing Committee

The Organizing Committee for the meeting consists of Wayne Barrett, Daniel Hershkowitz, Charles Johnson, Hans Schneider and Robert Thompson.

MEMBERSHIP FEE FOR ILAS

The production and mailing costs of *IMAGE* are fairly considerable. Consequently we have found it necessary to institute a small membership fee for ILAS to cover these and other necessary expenses. The fee will be $12. Fees paid in 1989 will also cover 1990, though a voluntary contribution of $12 to cover the second year will be greatly appreciated. Thereafter the fee will be annual. We hope all those interested in linear algebra will join ILAS. We realize that it may be difficult for some members to pay the fee. We will therefore waive it upon request. Members will receive *IMAGE*.

If you wish to join ILAS, please send the membership form in this issue and your membership fee (or a letter) to James R. Weaver (ILAS' treasurer).

ILAS-NET, THE ELECTRONIC NEWS SERVICE FOR THE ILAS

Name change: IMG-NET is now ILAS-NET. The new name corresponds to the name change for the Society.

Distribution list: There have been some problems with several e-mail addresses on the mailing list of ILAS-NET. If you are interested in being on the mailing list, and if you are not receiving ILAS-NET messages regularly, please send an e-mail note to Danny Hershkowitz at MAR23AA@TECHNION.BITNET

Fourth Issue of *IMAGE* Planned for Early January 1990

IMAGE is edited by R.C. Thompson and S.J. Leon. News items for the fourth issue should be sent to:

> Steven J. Leon
> Dept. of Mathematics
> Southeastern Massachusetts University
> North Dartmouth, MA 02747
> e-mail: F1LEON@SEMASSU.BITNET

All news of interest to the Linear Algebra community is welcome including: news of conferences, journals and books, upcoming events, and activities of members. E-mail appears to be the fastest and most efficient way to submit news items.

Future issues of *IMAGE* will contain feature articles on linear algebra activities in other countries. Reviewers who need review copies of books should contact S.J. Leon.

CORRECTED LIST OF ILAS OFFICERS

In the rush to get the second issue to press and in the mail some names were inadvertantly omitted from the lists of the ILAS Executive Board and International Committees. The following are the corrected lists.

Executive Board		Advisory Committee
President:	Hans Schneider	Richard A. Brualdi
Vice-President:	Robert C. Thompson	David H. Carlson
Secretary:	Daniel Hershkowitz	Charles R. Johnson
Treasurer:	James R. Weaver	

International Committee

Belgium	- P. Van Dooren	Ireland	- T. Laffey
Canada	- P. Lancaster	Israel	- A. Berman
Czechoslovakia	- M. Fiedler	Japan	- T. Ando
Finland	- J. Merikoski	Malaysia	- M.H. Lim
Great Britain	- S. Barnett	Portugal	- G. de Oliveira
Greece	- J. Maroulas	Singapore	- G.H. Chan
Netherlands	- H. Bart	Spain	- V. Hernandez
Hong Kong	- Y. Au-Yeung	Sweden	- A. Bjorck
Hungary	- P. Rozsa	United States	- G. Golub
India	- R. Bhatia	At Large	- B. Datta
Federal Republic of Germany	- L. Elsner		
People's Republic of China	- J.C. Chen & J.G.Sun		

PORTUGAL REVISITED

In the second issue of $\mathcal{IMAGE}$, we inadvertantly left out part of one paragraph in the feature article: *The Development of Linear Algebra in Portugal* by G.N. de Oliveira, University of Coimbra. The following is the corrected version of that paragraph.

How did the interest in linear algebra spread from Coimbra? In 1980 after receiving his doctorate in Coimbra, Dias da Silva came to the University of Lisbon. In Lisbon he built another Linear Algebra group of which he is presently the leader. In 1980, thanks to the Portuguese-Spanish meetings, held yearly since 1972, Jose Vitoria of Coimbra got in touch with Juan Miguel Gracia of the Colegio Universitario de Alava in the Basque country. This was the starting point of a fruitful collaboration in Linear Algebra between the two Iberian countries. It should be pointed out that the cooperation in Mathematics between Portugal and Spain has not been what it ought to be; before 1972 the mathematicians

of the two countries were practically unknown to each other and this situation has only been remedied with the Portuguese-Spanish meetings. In particular, in Linear Algebra, these meetings gave rise to the Iberian Linear Algebra Conferences, the fourth of which was organized last September in Valencia. Due to the action of Juan Miguel Gracia in the Basque Country and Vicente Hernandez in Valencia the cooperation between Portuguese and Spanish linear algebraists has grown very much in recent years. An outcome of this work is Zaballa's outstanding work. He proved recently a result which contains as a Corollary the Sa-Thompson interlacing inequalities.

Thus I am hopeful about the future.

NEWS ITEMS

Householder Symposium XI Meeting on Numerical Algebra, June 18-20, 1989 Tylosand, Halmstad, Sweden

Report by Ake Bjorck

This meeting is the 11th in a series, previously called the Gatlinburg Symposia. These meetings have been renamed to honor Alston S. Householder, a pioneer in Numerical Linear Algebra and the organizer of the first four Gatlinburg meetings. The meeting is an international conference of experts in the field of Numerical Algebra. The format of the meeting is a sequence of invited papers during the day and special workshops organized by the participants in the evening. Traditionally, only a few topics are emphasized. For this meeting they will be large scale nonsymmetric linear algebra problems, least squares, and matrix inertia and stability.

The meeting is being organized by the Householder committee, in cooperation with the SIAG/LA. Attendence is limited. All qualified persons are encouraged to apply to attend. The application should consist of a vita and an extended abstract (about two pages) of a paper you would present if invited to speak. The latter will be used by the committee in planning the program. Material should be sent before November 1, 1989 to Ake Bjorck, Department of Mathematics, Linkoping University, S-581 83 Linkoping, SWEDEN

The Sixth Haifa Matrix Conference
Report by Danny Hershkowitz

The Sixth Haifa Matrix Conference, will be held at the Technion - Israel Institute of Technology, Haifa, Israel, in the week of June 11th, 1990.

Please observe that the meeting is scheduled for June and not for January as in previous meetings. This is done in order to encourage participants in the Householder meeting to go to Sweden via Israel.

For information write to:

ORGANIZING COMMITTEE - SIXTH HAIFA MATRIX CONFERENCE, 1990

Mathematics Department, Technion - I.I.T., Haifa 32000, Israel

e-mail address: MAR64AA@TECHNION (bitnet)

Directions in Matrix Theory Conference, March 20-23, 1990 Auburn, Alabama

Conference Theme: To trace past and present developments and outline future directions in linear algebra and its applications.

Program and Invited Speakers: The program consists of 1-hour and 1/2-hour invited addresses by R.A. Brualdi, P. Fuhrmann, M. Marcus, H. Schneider, R.C. Thompson, P. van Dooren; T. Ando, J. Demmel, S. Friedland, C. Meyer, A. Ran, C. van Loan, I. Zaballa on areas of applied, numerical and theoretical linear algebra, as well as mini-symposia by research groups led by A. Berman, J. Dongarra, T. Kailath, G. de Oliveira and I. Zaballa, G. Styan, N.K. Tsing and C.K. Li.

Call for Papers: Contributed papers from all areas of matrix theory and linear algebra are invited. The conference proceedings will appear as a special issue of *Linear Algebra and its Applications*. Deadline for conference abstracts is January 10, 1990; deadline for submission of papers for the special issue is August 1, 1990.

Sponsors: SIAM Activity Group on Linear Algebra, International Linear Algebra Society

Organizers: Frank Uhlig, Tin-Yau Tam, Auburn University and David Carlson, San Diego State University.

Information: Frank Uhlig or Tin-Yau Tam, Department of Mathematics-ACA, Auburn University, Alabama 36849-5307.

SIAG/LA Election Results

Our sister organization SIAG/LA has elected a new slate of officers to serve three year terms beginning January 1989. The newly elected officers are:

Chairperson:	David H. Carlson, San Diego State University
Vice-Chairperson:	Michael T. Heath, Oak Ridge National Laboratory
Secretary:	Pamela G. Coxson, Lawrence Berkeley Laboratory
Program Director:	John G. Lewis, Boeing Computer Services Company

News items for the SIAG/LA Newsletter should be sent to Pamela Coxson, e-mail: pgcoxson@lbl.gov

Ewerbring Named as Wilkinson Fellow in Computational Mathematics
Report by Jack Dongarra

L. Magnus Ewerbring of Cornell University has been named the 1989-90 Wilkinson Fellow in Computational Mathematics. The fellowship is awarded by the Math. & Comp. Sci. Division at Argonne National Laboratory to a young scientist actively engaged in computational mathematics and parallel computing research. Ewerbring will join the Division for a one-year term beginning in September 1989.

Ewerbring will receive a Ph.D. degree from Cornell University in August 1989. For his thesis, he has derived generalizations of the singular value decomposition that have

important applications in canonical correlations and are well suited for parallel machines. He has worked at Thinking Machines Corp. developing code for linear algebra routines on the massively parallel Connection Machine. As part of his research, Ewerbring devised techniques for ensuring that data are efficiently mapped onto processors, realizing a savings in computation time of up to 33 percent.

Currently, Ewerbring is a Graduate Fellow of the Mathematical Sciences Institute at Cornell University.

The Wilkinson Fellowship was created by Argonne's Mathematics and Computer Science Division in memory of Dr. James Hardy Wilkinson, F.R.S., who for many years acted as a consultant and guiding spirit for such efforts as the EISPACK and LINPACK projects. The fellowship is intended to assist a young scientist who is actively engaged in state-of-the-art research in computational mathematics, numerical linear algebra, and parallel computing.

Further information about the fellowship can be obtained from Jack Dongarra; Argonne National Laboratory, Argonne, Illinois 60439; dongarra@mcs.anl.gov

CALENDAR OF COMING CONFERENCES

July 16-21, 1989 SIAM 1989 Annual Meeting, San Diego, California

July 17 - August 4, 1989, Rocky Mountain Mathematics Consortium Summer Conference–Matrix Theory for Applications (See article in $\mathcal{IMAGE}$ #2)

August 12-15, 1989, ILAS Inaugural Meeting, Provo, Utah (See article in this issue)

Fall 1989, Fourth Annual Southern California Linear Algebra Meeting
Information: S.G. Williamson, University of California, San Diego, La Jolla, CA 92093

January 8-10, 1990, First International Workshop on the Numerical Solution of Markov Chains, North Carolina State University
Speakers include: P.J. Courtois, N.M. Van Dijk, G.H. Golub, W.K. Grassman, G. Latouche, D. Mitra, M.F. Neuts, Y. Saad, P. Schweitzer, E. Seneta, G.W. Stewart, Y. Takahashi and K. Trivedi
Information: Dr. William J. Stewart, Computer Science Dept., North Carolina State University, Box 8206, Raleigh, NC 27695 e-mail: billy@ece-csc.ncsu.edu

June 11-17, 1990 The Sixth Haifa Matrix Conference, Technion - Israel Institute of Technology, Haifa, Israel (See article this issue)

June 18-22, 1990 Householder Symposium XI, Tylosand, Halmstad, Sweden (See article this issue)

August 20-25, 1990 Janos Bolyai Mathematical Society, 5th Conference on Numerical Methods, Technical University for Heavy Industry Miskolc, Hungary (Miskolc is about 180 km northeast of Budapest)
Focus of Conference: Survey recent results in Numerical Algebra and in Numerical Solution of Differential Equations.
Information: Katalin Balla, Janos Bolyai Mathematical Society, H 1368 Budapest, Pf. 240, Hungary

November 5-7, 1990, SIAM Conference on Linear Algebra in Signals, Systems and Control, San Francisco, CA. A short course is planned for Nov. 4.
Focus: The interrelationship between theoretical and computational linear algebra with application areas such as signal processing and control and systems theory.
Information: Contact David Carlson, Dept. Math., CSU San Diego, CA 92182 or Biswa N. Datta, Dept. Math., Northern Illinois Univ., DeKalb, IL 60115

Summer 1991, International Conference on Linear Algebra and Applications, Fudan University, Shanghai, China
Information: B. Datta, Dept of Math., Northern Illinois Univ., DeKalb, IL 60115, (niuvax!datta@mcs.anl.gov)

1991-92 Applied Linear Algebra Year, IMA, University of Minnesota
Emphasis: Fall Quarter: Discrete Matrix Analysis, Winter Quarter: Matrix computations, Spring Quarter: Signal Processing, Systems and Control
Information: R.A. Brualdi, Dept. of Math., Univ. of Wisconsin, Madison, WI 53706, e-mail: brualdi@vanvleck.math.wisc.edu (See also $\mathcal{IMAGE}$ #2)

JOURNAL NEWS

LINEAR ALGEBRA AND ITS APPLICATIONS (LAA)   Special Issues

Title:	Matrix Valued Functions
Special Editors:	J.A. Ball, L. Rodman, P. Van Dooren
Full Announcement:	LAA vol. 106, August 1988
Submission deadline:	July 1989

Title:	Interior Point Methods for Linear Programming
Special Editors:	D. Gay, M. Kojima, R. Tapia
Full Announcement:	LAA vol. 110, November 1988
Submission Deadline:	August 1989

Title:	Matrix Canonical Forms
Special Editors:	R.A. Horn, R.J. Laffey, R.L. Merris
Full Announcement:	LAA vol. 113, February 1989
Submission Deadline:	November 1989

Title:	Iterations in Linear Algebra and in Applications
Special Editors:	Owe Axelsson, John de Pillis, Michael Neumann,
	Wilhelm Niethammer, Robert J. Plemmons
Full Announcement:	LAA Vol. 116, April 1989
Submission Deadline:	March 1990

Title:	Algebraic Linear Algebra
Special Editors:	R.M. Guralnick, W.H. Gustafson, L.S. Levy
Submission Deadline:	August 1990

LINEAR AND MULTILINEAR ALGEBRA (LAMA)

Special issue on Algebraic Graph Theory. The issue will appear when sufficiently many papers have been received or by mid 1990 at the latest. The editors of LAMA encourage contributions in the area of combinatorial matrix theory.
Special Issue Editor: Russell L. Merris, Dept of Math, California State University, Hayward
Hayward, CA 94542

THE SIAM JOURNAL ON MATRIX ANALYSIS AND APPLICATIONS (SIMAX)
Report by Gene Golub, Managing Editor of SIMAX

SIMAX is still a very new journal and the style of the journal is still developing. We continue to focus on the matrix research that has to do with applications to areas such as signal processing, systems and control theory, statistics, Markov chains, mathematical programming, economic and biological modeling. We encourage you to submit your articles to us, especially in those areas of unusual application. In general, our editorial board members have been successful in receiving prompt reviews of journal submissions. We are taking steps to remedy the delicate problem of delayed reviews. Our waiting time from acceptance to publication is six to nine months and it is our intention to maintain this processing time.

We want you to know that every issue will contain articles of interest to each of our subscribers. Thus, as a matter of policy, we do not plan to devote more than a partial issue to any special topic.

You may now submit your accepted manuscripts in TeX, LaTeX, and $\mathcal{A}_{\mathcal{M}}\mathcal{S}$-TeX. SIAM journal macros are available through Net-lib and directly from SIAM via e-mail and floppy disk.

Although authors may need to spend some time making editorial changes, there are advantages in submitting your manuscripts to us in TeX. First, the author retains greater

control over the final appearance of his manuscript. Second, the introduction of errors from a second keyboarding is avoided. Third, one round of proofreading is eliminated. Fourth, authors who typeset their own articles receive 100 gratis reprints.

Circulation for SIMAX has increased nicely during the past year–we now have over 1100 subscriptions and we expect that number to continue to increase at a reasonable rate for the next several years.

SIMAX is an affordable journal. The current subscription rate for SIAM individual members is 36(39 for individual members outside the United States, Canada, and Mexico). The institutional rate is 95(118 for institutions outside the United States, Canada, and Mexico). Our academic members receive a subscription to SIMAX as a part of their membership.

Remember, for those of you who are SIAM members, SIMAX is your journal. For those of you who are not members, please consider joining SIAM and subscribe to SIMAX at the member rate.

Postscripts:

Submit manuscripts to: SIAM Publications, P.O. Box 7541, Philadelphia, PA 19101.

Requests for journal macros should be sent to Corey Gray, SIAM, 117 South 17th Street, Philadelphia, PA 19103-5052, e-mail: SIAM@WHARTON.UPENN.EDU

NEWS ON BOOKS

There are two recent books on Matrix Computations that are available in inexpensive paperback editions.

Handbook for Matrix Computations by Thomas F. Coleman and Charles Van Loan, SIAM, 1988, 264 pages

Review by S.J. Leon

This handbook can be used as either a reference or a companion text for courses involving numerical linear algebra. The book is divided into four parts. Chapter 1 provides a short course on programming in Fortran 77. Chapters 2 and 3 are devoted to LINPACK. Chapter 2 deals with the low level subroutines contained in LINPACK known as the BLAS (Basic Linear Algebra Subprograms). Only the Level-1 BLAS are covered. These involve vector operations requiring $O(n)$ input and $O(n)$ arithmetic operations.

Chapter 3 deals with the LINPACK routines for solving linear systems and least squares problems. It treats the standard matrix factorizations such as LU, Cholesky, QR, and the singular value decomposition. The final chapter is devoted to MATLAB. It gives an excellent summary of the computational aspects of MATLAB. It does not cover MATLAB graphics or features of MATLAB involving interaction with the underlying operating system. All of the chapters are divided into sections and each section contains a set of exercises. The book is very readable and gives a nice overview of the topics covered.

Experiments in Computational Matrix Algebra by David R. Hill, Random House 1988, 557 pages

Review by S.J. Leon

This book is designed for use in an elementary linear algebra course which includes computational exercises involving MATLAB. It can be used in conjunction with any of the standard linear algebra texts. Cleve Moler, the creator of MATLAB served as consulting editor for the text. The book is divided into five chapters. Chapter 1 is an introduction to MATLAB and Chapter 4 deals with programming in MATLAB. Chapter 2 deals with linear systems and the *LU* factorization and Chapter 3 covers the eigenvalue problem. The fifth chapter concerns applications to graph theory, Markov processes, and least squares problems.

The expositions in the book are clear and well written. Freshpersons and sophomores should be able to read and follow the text with little trouble. The book is recommended as a companion text for elementary linear algebra courses using MATLAB.

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            ILAS INAUGURAL MEETING
   Brigham Young University, Provo, Utah, U.S.A.
             August 12 -15, 1989
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REGISTRATION FORM

Please return this form as soon as possible to

> James R. Weaver
> Department of Mathematics and Statistics
> The University of West Florida
> 11000 University Parkway
> Pensacola, Florida 32514-5751
> U.S.A.

ALL CHECKS SHOULD BE MADE OUT TO:
      THE INTERNATIONAL LINEAR ALGEBRA SOCIETY

You may write one check for the total amount.

NAME: _____

ADDRESS: _____

        _____

        _____

        _____

PHONE: _____

E-MAIL: _____

1. ATTENDANCE

    _____   Please register me for the ILAS Inaugural Conference.

2. ACCOMODATION and BOARD:

    _____   I have returned the Housing form to BYU

    _____   I have not returned the Housing form.

    _____   Please send information on off-campus housing.

3. LUNCHEON BUFFET: (Cost $15 per person)

I would like to make _____ reservations for the luncheon

buffet on August 13.

    _____   I don't plan to attend the luncheon buffet.

4. MEMBERSHIP IN ILAS:

If you are not yet a member of ILAS and wish to join, fill out the form below.

5. PAYMENT

	Enclosed	will be paid at meeting
Luncheon buffet($15)		
ILAS membership($12)		
Total		

MEMBERSHIP IN ILAS -- Reply Form

If you wish to join ILAS, please send the following form and your membership fee (or a letter) to James R. Weaver (ILAS' treasurer).

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To:  James R. Weaver
     Department of Mathematics and Statistics
     The University of West Florida
     11000 University Parkway
     Pensacola, Florida 32514-5751
     U.S.A.
```

NAME: _____

ADDRESS: _____

             _____

PHONE: _____

E-MAIL: _____

[ ]   I wish to become a member of ILAS.
       Enclosed is $12 - my membership fees
       for 1989 - 1990.

[ ]   I wish to become a member of ILAS.
       Please waive my membership fee.

ALL CHECKS SHOULD BE MADE OUT TO:

        THE INTERNATIONAL LINEAR ALGEBRA SOCIETY

International Linear Algebra Society (August 11 - August 16, 1989)

Campus Food and Housing Registration Form
Brigham Young University, Provo, UT

If campus food and housing packages are desired, complete this form and mail to the office of General Services, 116 GSRB, Brigham Young University, Provo, UT 84602. Please do not send any money. All campus food and housing is payable upon arrival.

PLEASE PRINT OR TYPE.   Male___   Female___

Name: _____   University: _____
                                   (full Name of University)

Department: _____   Address: _____

City: _____   State/Country:_____

Zip: _____   Phone: (____)_____

Arrival Date: _____   Departure Date: _____

Campus Food and Housing Package # _____

CAMPUS FOOD AND HOUSING

Food and On-campus Housing Packages:

Housing is Friday August 11 through Tuesday August 15, 1989. Food begins with Breakfast Saturday August 12 and ends with Dinner August 15. This does not include Sunday meals August 13, 1989. No couples housing available.

#1. Shared (2 per room) w/ meals, per person $74.90
     Roommate Preference:_____

#2. Shared - room only, per person $50.00
     Roommate Preference:_____

For participants living off campus, the following meal only packages are available.

#3. 3-day meal package (9meals) $31.20
     Breakfast Saturday through Dinner on Tuesday. (Sunday not included)

#4. Lunch and dinner only (6 meals).   .   .   . $23.25
     Lunch Saturday through Dinner on Tuesday. (Sunday not included)

____I would prefer a private room if space is available. The cost: Private room w/meals, per person is $98.40. Private room only, per/person, per/night is $18.50.