

NA Digest Saturday, March 5, 1988 Volume 88 : Issue 10

Today's Editor: Cleve Moler

Today's Topics:

- [Finding Degenerate Eigenvectors](#)
- [Numerical Analysis Course Numbering](#)
- [Gateaux](#)
- [Re: Triangulation of 2-d domains](#)
- [Request for DAE test problems](#)
- [Supercomputing '88 Conference](#)

>From: Xiao-He Zhang <xiaohe@Tybalt.Caltech.Edu>

Date: Mon, 29 Feb 88 04:48:15 PST

Subject: Finding Degenerate Eigenvectors

Hi, netters,

I am looking for an algorithm, or better a subroutine I can call, to find all DEGENERATE eigenvectors of a general real or complex matrix of size $< 10 \times 10$. I have tried those subroutines for GENERAL real or complex matrices in LINPACK, EISPACK and IMSL. They give me correct eigenvalues and both left and right eigenvectors when the matrix is not degenerate, i.e when all eigenvectors are different.

However, they give me at best identical eigenvectors for the degenerated eigenvalue, which is incomplete for my problem; or something does not make sense at all. I searched LINPACK and EISPACK for the keyword "degenerate". Nothing appropriate was found.

If any of you have some suggestion, please e-mail it to me as I do not read netnews as often as I SHOULD. Thank you for your help.

Sincerely,

Xiao-He Zhang || xiaohe@abbott.caltech.edu | xiaohe@caltech.bitnet

>From: Kris Stewart <Q300058%CALSTATE.BITNET@forsythe.stanford.edu>

Date: Tue, 01 Mar 88 05:00:04 PST

Subject: Numerical Analysis Course Numbering

I belong to a Math Sciences Department which includes as separate groups: Math, Applied Math, Statistics, Math Education and Computer Science. I teach Numerical Analysis and am a member of the computer science group (as a developer of mathematical software this is where I felt most comfortable). In response to a department review from last year, we are renaming computer science courses within the department

as CS ###, primarily to aid students in CS whose transcripts don't immediately reflect CS. I have always felt Numerical Analysis should be placed in between Applied Math and Computer Science and would like the course double numbered, i.e. the same course would appear in the catalog as CS ### and MATH ###. The computer science group is in favor of this, some in the math groups are vehemently opposed, offering the justification that 'other schools' put Numerical Analysis in the Math Department.

I would really like to hear the opinion of other practicing Numerical Analysts on how things are done at your University. Perhaps also, how you wish things were done at your University.

Thanks,
 Kris Stewart
 Department of Mathematical Sciences
 San Diego State University
 San Diego, CA 92182 (619-942-1012)
 (na.kstewart@na-net.stanford.edu or q300058@calstate.bitnet)

 >From: R. G. Bartle <RGB@MATH.AMS.COM>
 Date: Tue 1 Mar 88 11:23:54-EST
Subject: Gateaux

For some time I have felt uneasy about the circumflex in Gateaux' name, since I notice that it does not appear on (at least some of) his papers. I checked with the grand dragon, J. Dieudonne', who reports that Gateaux' name appears on the official roster of all alumni of the Ecole Normale Sup. who were killed in WW I, and that his name appears WITHOUT a circumflex. Dieudonne' writes: "I think this clinches the matter." So do I. I never thought that Gateaux was a piece of cake.

 >From: Adrian Baddeley <munari!natmlab!dmsim!adrianb@uunet.uu.net>
 Date: 1 Mar 88 23:47:16 GMT
 Organization: CSIRO, Div. of Maths and Stats, Lindfield, Aust.
Subject: Re: Triangulation of 2-d domains

In article Volume 88, #8, ashcraft@yale.UUCP (Cleve Ashcraft) writes:

>I am interested in ordering sparse matrices arising from 2-d finite
 >element problems which use linear triangular elements. The density
 >of the grid points in the domain should be roughly equal throughout
 >the domain, and the triangularization should be "good". The
 >triangularization should exhibit no apparent regularity, this last
 >property is very important.

Try using the Delaunay triangulation, e.g.
 Lee D.T. and Schachter B J, Two algorithms for
 constructing a Delaunay triangulation,

Int. J. Comput. Inform. Sci. 9 (1980) 219-242.

Green P J and Sibson R , Computing Dirichlet tessellations in the plane. Computer J. 21 (1978) 168-173.

Given a finite set of points in the plane, this produces a triangulation (of the convex hull of the points) which uses the given points as the triangle vertices. So you can produce the type of regularity you want by strewing points in some quasi-regular manner over your plane region.

There is an engineer/programmer called S.W.Sloan from the University of Newcastle (Australia) who has written and used Delaunay triangulation algorithms for finite element problems. The algorithms are published but, sorry, I don't have the reference to hand.

adrianb@natmlab.dms.oz.au

Adrian Baddeley, CSIRO Division of Mathematics & Statistics, Sydney, Australia.
PO Box 218, Lindfield NSW 2070, Australia. Phone: +61 2 467 6062 (24 hrs)

>From: Y. F. Chang <YCHANG%CMCVX1.CLAREMONT.EDU@forsythe.stanford.edu>
Date: Fri, 4 Mar 88 11:11 PST
Subject: Request for DAE test problems

This is a request for multiple-constraint problems, or DAE's with more than one algebraic equation.

I have just finished writing and testing a program to solve multiple-constraint problems. It was tested on a compound pendulum, where a second pendulum hangs from the first, which in turn hangs from the ceiling. I shall next test the program on a coupled pendulum, where the energy transfers back and forth between a pair of pendula.

I seek additional examples for test of robustness.

Since my BITNET address is new to the system, some nodes may not recognize the 'CLAREMONT.EDU'. In that case, try

YCHANG%CMCVX1.CLAREMONT.EDU@CUNYVM.CUNY.EDU

If you prefer the USMail, try

Y. F. Chang
976 W. Foothill Blvd
298
Claremont, CA, 91711

>From: George Adams <gba@bit.ecn.purdue.edu>

Date: Thu, 3 Mar 88 22:23:51 EST

Subject: Supercomputing '88 Conference

SUPERCOMPUTING '88

November 14-18, 1988

Hyatt Orlando

Kissimmee, Florida, USA

Sponsored by:

Computer Society of the IEEE and ACM SIGARCH

In Cooperation with:

Argonne National Laboratory, Lawrence Livermore National Laboratory,

Los Alamos National Laboratory, NASA Ames Research Center,

National Center for Atmospheric Research,

National Science Foundation, SIAM, Supercomputing Research Center

Papers submitted by: March 14, 1988

Research exhibit proposals due: April 4, 1988

Poster proposals due: August 2, 1988

Conference Highlights-

Keynote Speaker: Seymour Cray, Cray Research

Banquet Speaker: Carl Conti, IBM Enterprise Systems

ACM Annual Computer Chess Tournament

Supercomputing '88 is a new conference that will bring together supercomputing system researchers, designers, and users to report new advances and experiences, state needs, suggest future directions, and contribute to discussions. It will include tutorials, a high quality technical program, on-line and video taped demonstrations, informal poster sessions, vendor and university exhibits, and product briefings.

TOPICS OF INTEREST. Examples include, but are not limited to, the following:

Science and Supercomputing

The Impact of New Technology on the Future of Supercomputing

Supercomputing Execution Environment

Supercomputing Development Environment

Supercomputing Application Environment

Supercomputing System Evaluation

Supercomputing Management Issues

Mass Storage and Supercomputers

Technical Aspects of Products

User Experience

PAPERS. Authors are invited to submit papers which report concrete results and experience. Papers reporting important negative results are also encouraged. Selection criteria will include originality, clarity, and relevance.

Requirements: Papers must be original material not previously published. Papers must be submitted without conditions; authors must obtain any necessary approvals and/or clearances prior to submission. Copyright release will be required. Authors of accepted papers will be responsible for retyping corrected papers on special forms to be provided and for preparing visual material for their presentations using guidelines to be provided. Camera-ready copy is due July 18, 1988. Presentation visual material is due for quality review October 4, 1988.

Instructions: Submit five copies to the Program Chairman by March 14, 1988. Papers must be in English, be typed double-spaced, and not exceed 25 pages (about 5000 words). Papers must have: (1) a title page that lists the name, mailing and electronic address, and telephone number for each author; (2) an abstract; (3) keywords; (4) and the presentation media requirement. For multiple author papers, identify the corresponding author and the presenting author.

RESEARCH EXHIBITS. Some space will be available for researchers with demonstration-oriented exhibits of their research.

Instructions: Contact the Program Chairman.

POSTERS. In addition to informal evening poster sessions, an on-line poster session will be scheduled where people who have developed interesting applications will demonstrate them using exhibitor equipment.

Instructions: Contact the Program Chairman. Proposals for on-line posters should be made jointly with the collaborating exhibitor.

SUPERCOMPUTING CENTER MANAGERS ROUNDTABLE. Special informal sessions will be organized so that supercomputing center managers can share recent progress, discuss common problems, and consider opportunities for collaboration.

Supercomputing '88 Organizing Committee
General Chairman George Michael, LLNL
Program Chairman Stephen Lundstrom, Stanford
University and PARSA
Deputy Chairman Robert Voigt, ICASE
Exhibits Chairman Roger Anderson, LLNL
Finance Chairman Sidney Fernbach, consultant
Local Arrangements Chairman Dennis Duke, Florida State Univ.
Publication Chairman Harlow Freitag, SRC
Publicity Chairman George Adams, Purdue University
and RIACS

Supercomputing '88 Advisory Committee
Robert Borchers Lawrence Livermore National Laboratory
Bill Buzbee National Center for Atmospheric Research

F. Ron Bailey NASA Ames Research Center
Melvyn Ciment National Science Foundation
Jack Dongarra Argonne National Lab
Doug DeGroot ACM-Sigarch; Texas Instruments
Joanne Martin IEEE Computer Society, TC on Supercomputing; IBM
Norman R. Morse Los Alamos National Laboratory
Paul Schneck Supercomputing Research Center
Daniel Sorenson Argonne National Laboratory

For information on the conference, program, or exhibits contact one of the following:

General Chairman Program Chairman Exhibits Chairman
George Michael, L-306 Stephen F. Lundstrom Roger Anderson, L-306
LLNL ERL 455 LLNL
P. O. Box 808 Stanford University P. O. Box 808
Livermore, CA 94550 Stanford, CA 94305 Livermore, CA 94550
(415) 422-4239 (415) 723-0140 (415) 422-8572
gam@lll-crg.arpa lundstrom@sierra.stanford.edu anderson@lll-crg.arpa

For registration information contact the Computer Society of the IEEE,
1730 Massachusetts Ave., N.W., Washington, DC 20036-1903. (202) 371-1013

End of NA Digest
