Finite Element Circus Meeting
University of Michigan
April 17-19, 1980

Beautiful spring weather greeted the circus members as they arrived in Ann Arbor for the Spring meeting of the circus hosted by Mitch Lustin and Ridg Scott.

The sessions were held at the East Engineering Building on the University of Michigan campus with 26 circus members attending and 19 presenting talks.

Following 13 talks on Friday Barb and Mitch Lustin graciously hosted a party at their home. The group then moved to the Hung-Wan restaurant for an excellent Chinese dinner. Saturday the group
reconvened at 9: A.M. for the remainder of the talks.

As previously decided, the Fall 1980 meeting of the circus will be held at Rutgers University.

Continuing our tradition, R. Falk presented the following:

There is a fine fellow named Ivo, whose circus is quite a good show, though there's no flying trapeze,

For solving P. D. E. S,

Ivo's circus is the place to go.
Ridgway Scott
Mitchell Luskin
Jim Douglas
Dick Ewing
Jean Roberts
Randy Bank
Bill Hager
J.S. Tinsley Oden

Bertrand Mercier
Cliff Withers
Don S. Walden
William J. Hotta
Dick Faek
Jim Bramble
O.K. Ager
Robert
Saban Kikuchi

Todd Dupont
Ben Lucic
J. Posnak
John Osborn
Peter Sammon
Tom Russell
Douglas N. Arnold
Michael Vogelius
Rolf Rannacher
Charles Goldstein
R. Scott, Discontinuous Piecewise Polynomial Approximation of Plasticity Problems


J. Douglas, Jr., Simulation of Miscible Displacement

R. Bank and D. Rose, Parameter selection for Newton-like methods

W. Hager, Semi-dual approximations in optimal control.

J. T. Oden, RIP-methods (Reduced-Integration Penalty) for Contact Problems in Incompressible Elasticity

T. Dupont, Mesh modification and inconsistency

J. Pasciak, Fourier Methods for BBM with Pseudo Differential Operators

J. Osborn, An Observation on Mixed Methods

T. Russell, Combining finite elements with the method of characteristics for a miscible displacement problem

R. Rannacher: On the f.e.a. of Navier-Stokes problems

B. Mercier: Polynomial spectral methods for the advection equation

O. Widlund: Remarks on penta potential theory.
L. B. Wahlbin, Stability of $H^1$ projections (joint with A. H. Schatz)

D. N. Arnold, Reduced Integration in the Finite Element Method

Michael Vogelius

I. Babuška

V. B. Falk

Approximation by polynomials.

High order Finite Element Method

The Finite Element Method with Non-Uniform Mesh Size for Elasticity Problems

J. H. Bramble,

The efficient solution of Babuška's multiplier method for Dirichlet's problem and Falk's multiplier method for the first biharmonic boundary value problem.
Finite Element Circus Meeting
Rutgers, The State University
Nov. 14-15

The circus convened at Rutgers in fine fall weather. The meetings were characterized by excellent snacks, a fine cocktail party at the Falks, and a leisurely schedule of talks. There were 32 attendees and 12 speakers.

The following poems were contributed:

* A Swedish Haiku

CREATE!

Im Computing Chaos

an ANCHOR, and

Dancing Differentials

(L. Wahlbin)
Nostalgia

When I think back on the events over these past ten years, I recall the great accomplishments, tho' of course I've had his FEARS. I never forget there were times when the coefficients got rough. But we always got at least 0 (Ch^2), and for me that's close enough.

(R. Fark)
Attendees

Bruce Kellogg
Dick Ewing
Rick Ewald
Jin Brandt
Joe Poumai
Todd Dupont
Michael Vogelius
Zinda J. Nager
Randy Bank
Tobin Kikanishi
J. Tinsley Oden
Mary Fennitt Wheelle

Dan B. Warner
William D. Kotara
Stephen Leventhal
Garth Baker
T. A. Dougalis
Peter Monk

Douglas N. Arnold
Joe Farneth

Michael B. Eisenman
Steve Levin
R. E. Jordan
Mitchell Lurkin

Abdel K. Ogul
Gerard Richter
Andrey Movchan
Apostolos Gerasoulis
E. C. Pires
Jiang Jin Sheng
Kellogg: Finite element method for a scattering problem (W. A. Aziz, M. Dorr)

Bramble: —

Dupont: An analysis of Miller's Moving Finite Element Method in 1-d

Vogelius: Dimensional reduction vs. Asymptotic Expansion: Treatment of boundary layers

Kikuchi: Penalty-Finite Element Approximations to Stokes' Problems (Joint: J.T. Oden)

Berger: Sub-analysis for a Variable-Mesh Indicial Difference Scheme for a Singular Perturbation Problem

Luskin: Analysis of a Fractional Step Method for the Gas Pipeline Equations (Joint with B. Temple)

Wahlbin: A Remark Concerning Stress Intensity Factors. (Joint with A. H. Schatz)

Babushka: The fame is minor. Results and robustness with help of the Pavlov Petrov

Douglas: Finite difference/method of characteristics procedure for mixed displacement
Arnold: Numerical solution of the Korteweg-de Vries equation

Symonke: Finite Element analysis of upwinding for a stiff convection diffusion equation.

Vereshi: Methods for magnetostatic field computation.
Finite Element Circus
University of Maryland
February 20, 21, 1981.

A "Welcome Finite Element Circus" sign greeted the members as they arrived at the Quality Inn in College Park, sight of the Spring circus. After 15 talks on Friday, the Babuška graciously hosted a cocktail party at their home, after which we had an excellent dinner at the China Garden restaurant. On Saturday, seven additional talks completed the meeting.
Todd Dupont
Mitchell Juskin
Peter Samman
Richard Salk
Doug V Arnold
Graham T. Craig
Hovde Han
John Hall
Alan Berger
Stephen Leventhal
Laurence Marni
Peter Pencell
Howard Burkorn
Dick Elving
Joel Rogers
Shagi - R. Shif
Dick Morgan
Camille D'Amunzio
Vladay Benayji
William Szymczyk
Michael Buterman

John Osborn
Roger Temam
A.K. Aziz
Bill Hager
Alan Weiser
Tom Russell
J. Timothy Oden
Michael Vogelius
Zinda J. Kaya
Mary Fusat Wheeler
Jim Douglas
Steven M. Serbin
Jean E. Roberts
J. W. Bisch
A. Schatz
V. Dongali
O. Korkehdian
Randy Bank
Joseph Rosenblatt
Peter Sammon - Some Regularity Theory for a Miscible Displacement Problem in Porous Media

Richard Falk - A F.E.M. for the Simply Supported Plate Problem

DN Arnold - On the stability of Galerkin projections with different trial and test spaces

Graham Carey - Adaptive mesh and variable order upwinding for convection dominated flows.

Houde Han - A discretization scheme for singular perturbation problems (with R. Kellogg)

John Bell - A Variable Mesh Error Estimate for The El-Mestikawy-Weihl Exponential Scheme


Randy Bank - Computing error estimates for adaptive refinement schemes

Charles Elliott - A Finite Element Method for Solving Helmholtz Type Equations in Waveguides and Other Unbounded Domains.
Milo Der - Weighted Space Approximation

John Osborn - Approximations of the Solution of Equations with Rough Coefficients

Alen Weisn - On finite element methods which locally adapt both mesh size and polynomial degree

Tom Russell - Multistep Galerkin methods along characteristics for convection-diffusion problems; some miscellaneous oil industry problems

A problem in homogenization - Michael Vogelius

Binder/Kays Implementation of interface boundary conditions in time dependent problems.

Steve Serbin - A Fourth-Order Nonlinear Analogue of the Baker-Bramble Scheme

Babuskev Treasurer of art

I. Hilde: L_p-norm bounds of Riesz operators

A Schatz: Singular Function methods
The Maryland Circus

when the circus comes to Maryland
it's always a special treat.

We, bundled at what Our magazine calls
"a place that can't be beat."

Before dinner I've hosted a party
with unlimited alcoholic consumption.

But the highlight was my fortune cookie.

It said: You will need an
inverse assumption.
Finite Element Circus
University of Texas
October 30-31, 1981

Linda Hayes and Tinsley Oden hosted the fall, 1981 meeting of the circus, held at the University of Texas. Continuing the tradition of unique dining experiences (last time a Texas barbeque at Coupland, Texas), the 81 participants enjoyed a dinner cruise on Friday evening.

On Saturday, 6 talks were given, making a total of 17 for the meeting. Continuing another tradition, Al Schatz, the last speaker, communicated results so recent that the proof of the main result was first discovered by Al during the last half of his talk.
B. Kellogg
Groben Cramer
John Osborn
Dave Melkus
Mitchell Link
Bill Hager
Tony Miller
WES Heagy
David Harry
Murray Cantor
Douglas N. Arnold
Rick Fark
Tansley Odell

Pamela J. Hayes
Jean E. Roberts
Dick Ewing
Tom Russell
Steve Serbin
Jim Douglas
Edward Porpino
Dan Y. Tranilo de Silva

Mary Janet Wheeler
Jerome Jarrold
Eric B. Becker
Jerry Finie

Olivia-Pierre Lagrotte
Ramachandran Kirshan

Mehmet Utku
Alfred Schetz
Houde Han
Babuška - Generalized FEM

Roberts - Compressible Miscible Displacement

Russell - Linear convection-diffusion equation (joint with R. Ewing) and miscible displacement by FEM with characteristics: numerical results

Douglas - Numerical solution of a nonlinear hyperbolic integro-differential equation arising in the description of the contraction of a muscle

Wheeler - Some numerical results for mixed methods

Jaffre - Simulatio of two-phase displacements by using mixed finite elements

Schatz - On singularly perturbed Reaction-Diffusion equations (the Finite element method)

Han - The finite element method for a singular perturbation problem using enriched subspaces (with R. B. Kellogg)

Kellogg: a) a density result used in scattering problems (with A. K. Aziz, M. R. Dowd)
b) singular perturbation 2 pt. b.v.p. with turning point (with A. Bergo, H. Han)
Cary: Stability of Penalty Form for Stokes Flow
Osborn: Eigenvalue approximations by mixed methods
Temkin: On the smoothing property of the
Crank-Nicholson Method (joint with
R. Rannacher)

Muller: On some a posteriori error estimates

Cantor: Solution of Potential Type Equations on \( \mathbb{R}^2 \)

Arnold: Spline Collocation for Elliptic YDOs on Curves

Hager: Dual Approximations

On Friday evening the Hager's held a cocktail party at their home, after which the group went to the lovely
Historic Boalsburg Tavern in Boalsburg, Penn. for dinner.

Our Supper club discussion was briefly interrupted by a fire drill. Members stayed at the quaint Nittany Lion Hotel
and the meeting was held in the Keller Building on the Penn State Campus.
Finite Element Circus
Pennsylvania State University
April 16-17, 1982

Bill Hager hosted the Spring 1982 Circus Meeting in State College, Pennsylvania. There were 22 circus members in attendance and 13 gave presentations. The meeting was conducted at a leisurely pace with nine talks on Friday and four talks on Saturday. Jim Douglas was the acting 'Ring Master' due to the absence of Ivo Babuska.

On Friday evening the Hagers had a cocktail party at their home, after which the group went to the lovely Historic Boalsburg Tavern in Boalsburg, Penn. for dinner.

Our Saturday discussion was briefly interrupted by a fire drill. Members stayed at the quaint Nittany Lion Hotel and the meeting was held in the Keller Building on the Penn State Campus.

Sandra Hager
ATTENDEES

John Douglas
Dick Ewing
Tom Russell
Charles Goldstein
John Osborne
Doug Arnold
David Richter
Kirk Jordan
Marc Friedman
Alfred Schatz
Larry Bales
Peter Marsh
Max Burgers
Michael Vogelius
Ron B. Wahlbin
Michael Bitterman
Tony Miller
Randy Bence
Linda R. Hayes
Ty Olber
Bill Hager
Douglas - An alternating direction iterative method of mixed finite element methods

Arnold - Exponential convergence of a Spectral-Galerkin method for a boundary integral equation

Freund - Numerical solution of the nonlinear magnetostatic problem

Schatz - Singularly perturbed convection-diffusion problems


Monk - A Lagrange multiplier mixed finite element method for the simply supported plate problem

Vogelius - Bounding the inverse of the divergence operator on piecewise polynomials.

Wahlbin - Singularly perturbed reaction-diffusion problems

Bieterman - An Adaptive Space mesh modification in a method of lines for parabolic equations.

MieS - Finite Element Solution of Terms constrained Optimal Control problems governed by Parabolic PDE's

Mullin - Calculation of Stress Intensity Factors

Bank - Computable error estimates for adaptive refinement

Olsen - Posterior processing of penalty method solutions of Stokes problem
Finite Element Circus  
University of Chicago  
November 5-6, 1982

The Circus members were greeted by the first freezing weather and snow flurries of the Winter '82. Jim Douglas hosted the Circus meeting and served as ring master owing to Ivo having the flu. The Circus opened at 9 AM Friday morning in the Center for Continuing Education on the University of Chicago Campus. The Circus moved to the Mathematics building for talks on Friday afternoon and Saturday morning. In total, 21 talks were given. We were treated to a fine lunch of prime rib at the Faculty Club on Friday. Jim and Mary Lee Douglas had a very nice cocktail party at their home, and the group had dinner at Mallory's. Jim now has the distinction of being the first Circus member to have a son or daughter give a talk.

We gathered in Chicago to hear the progress that has been made, to learn of the open problems, and the new tricks of the finite element trade.

though Jim was a great stand-in and we had our usual rhyme; It’s not the same old Circus without Ivo keeping the time.

R. Falk  
'82
ATTENDEES

Zeneba J. Hayes
Li Yushing
Li Guangyu
Juan E. Santos
Maria Cristina J. Squez
David A. Malbus
Fulvio Milner
Bill Hager
Steve Serbin
Ridgway Scott
Dick Ewing
Craig Douglas
Bill Hymnek
Stephen Lashenthal
Alan Berger
Sonya Maria Fidelis Garcia
Dick Talk
John Osborn
Vassilios Dangalis

Ohanes Karakashian
Jim Bramble
Gary B. Marcus
John Dethel
Peter Monk
Maurice Cole
Cal Atchley
Larry Bales
Marvin Friedman (set 2001 Singh)
Jeff E. Lewis
Charman I. Gupta
Jim Dongho J.
Mitchell Suski
Randy Sand
Ty Olsen
Al Atchley
Carby A. de Mora
Deborah Codine
TALKS

Li Yung-Kuen, A necessary and sufficient convergence condition for Galerkin Method.

Julen Santos – Finite Element Method for the simulation of wave propagation in two dimensional inhomogeneous media.

Fabio Milner – A mixed finite element method for a nonlinear second order elliptic problem.

Bill Hoger – Penalty Techniques

Steve Serbin – Some Cosine Methods for Second Order Systems of ODE’s with Time-Varying Coefficients

Ridgway Scott – A family of velocity-pressure spaces for the Stokes equations

Dick Ewing – Use of finite elements for displacement simulation in porous media

Craig Douglas – Abstract Multi-Grid Methods

Bill Hyman – An adaptive finite element method for convection diffusion equations

Alan Berger – On the Behavior of the Exact Solution and the Error in a Numerical Solution of a Boundary Turning Point Problem

Rick Falk – A parameterization method for the Stationary Stokes Equations

Vassilios Dougalis – High order (Runge-Kutta type) fully discrete methods for the Korteweg-de Vries Equation
Lars B. Wahlbin: Pollution Effects from Reentrant Corners: Proofs.

Larry Bales - Semidiscrete and Single Step Fully Discrete Approximations for Second Order Hyperbolic Equations with Time Dependent Coefficients.

Mark Friedman (Satum singh)

CHAITHN P. GUPTA: - $L_2$ and Negative Norm estimates for 2-dimensional elasticity problem using mixed method.


Michael Jurski: On the variable penalty method for the Stokes equation (with H. Kheshgi Kheshgi)

Alfred Schatz: A Fast solution method for 2nd order elliptic operators, on piecewise smooth domains.

Carl de Boor / K. Höllig: Approximation with smooth Bernstein pp functions.

Carlos A. de Moura: A linear uncoupling algorithm for a nonlinear model for coupled thermoelastic dynamics.
The finite element circus once again returned to the shores of Lake Cayuga for the Spring, 1983 meeting. Besides a full schedule of 17 talks, circus members enjoyed a busy social schedule with lunch at the Stetler, an enjoyable cocktail party hosted by Jim and Peggy Bramble, and a fine dinner at L'Auberge.

An example of the growing influence of finite element members in their local communities was provided by Al Schatz's invitation to respond to the following question posed by the Inquiring Photographer of the Ithaca Times (5/83):

Q: What's the hardest part of growing up?
A: Accepting the experience and advice of older people, especially when you've thought things over and you disagree.

(* Al claims he actually said "being forced to accept..."

Bruce Kellogg contributed the following poem once again inspired by the beautiful Cornell campus:

High above Cayuga's waters
The circus tent was set.
Fine talks were given by Wheeler, Berger,
The Douglasses, Vogelius, and Schetz
From Sobolev space \& \(O(h)\)
To water dropping down,
The talks \& thoughts ranged far and wide
In domains both square and round.

Finite differences got the finge
On slides with many a hue,
We then retired to Peg and Jim's
For a mug of foaming beer.
Attendees

Todd Dupont
Joe Fasina
Steve Laventhal
Alan E. Berger
A. K. Ozis
Sue Mackessy
Steve Serbin
Craig C. Kough
John Osborn
Richard Fack
Stephen Hilbert
Don Boyce
Charlan P. Gupta
Ali Akhter
Larry Balge
Jim Bramble
Donald A. French

Tony Miller
Michael Buterman
Tom Russell
Ridgway Scott
Dan B. Wahlbin
B. Kellogg
Kenneth Richardson
Michael Vogeli
Dick Ewing
Mary Janet Wheeler

Jimmy Douglas
Jackie

Oliver A. Mc Bryan
Talks

T. Dupont - 1st order hyperbolic Galerkin & rough initial data convergence for nonlinear parabolic Galerkin

J. Pasciak - A preconditioner for the Neumann problem on mesh domains

A. Berger - Analysis of a Conservative Finite Difference method for a singular Perturbation Problem

C. Douglas - Smoothing and Acceleration and Multigrid

J. Oston - Approximate Solutions of differential equations with rough coefficients

C. Gupta - A family of finite elements for plane elasticity problem.

A. Schatz - A Fast elliptic solver on irregular domains using preconditioned conjugate gradient

L. Bales - On Second Order Hyperbolic Equations with Time Dependent Coefficients

T. Russell - On stability of an adaptive implicit time-stepping method for petroleum reservoir simulation
R. Scott - Convergence estimates for the discrete ordinates method for the transport equation.


B. Kellogg Oscillatory two point boundary value problems.

Mary Fanet Wheeler - Some Numerical Methods for Reservoir Engineering Problems: (Block Centered Finite Differences and a Nine Point Finite Difference Approximation for Concentration)

J. Janghej Plane elasticity with relaxed symmetry.

S. Baskar Geometrical tolerances at an adaptive approach in FE2G


Kenneth Eriksson Galerkin methods for singular boundary value problems in one space dimension.
The Fall meeting of the finite element Circus was held at the University of Tennessee in Knoxville. There were twenty-six attendees with sixteen talks given. The social schedule included a luncheon on Friday hosted by the Mathematics Dept., an excellent dinner at Alexander's restaurant, and a party at Steve and Cindy Serbin's home and also hosted by Natalie and Gene Wachspss.

The world's fair had gone from Knoxville and the town was kind of gloom. There was hope for some new excitement and a fear it might never come.

Then Steve Serbin had a vision of a quasi-optimal event. And now the symbols of Knoxville are a sunsphere and a "circus" tent.
Attendees

Stephen Keeling
Larry Bales
Steve Serbin
Gene Wechsler
Ann B. Waldstein

Michael Vogel

Chaitan P. Gupta
Fabio Milner
Douglas A. Amsel
John Aston
Peter Monk
Chip Castel
Bill Layton

Maria Cristina Jimenez
Stephen Lewenthal
William Symaryak

Raj Paal Soni

Ohannes Karakashian

George H. Guirguis
TALKS

Babuška - Some remarks to the f. evanecion of FE

Russell - Simulation of miscible displacement using mixed methods and a modified method of characteristics

Douglas - Applications of superconvergence

Dolevkin - The numerical solution of the reduced wave equation using preconditioned conjugate gradient methods.

Gupta - Global estimates for finite element primal hybrid method for 2nd order elliptic equations.

Arnold - Mixed and nonconforming finite element methods; implementation, post-processing, and error estimates

Milner - Interior and superconvergence estimates for mixed methods for second order elliptic problems

Layton - Defect Correction for Singularly Perturbed Convection Diffusion Equs.

Szymczak - Some remarks on finite element methods applied to 2-D convection diffusion equation

Bales - Cosine methods for second order hyperbolic equations with time dependent coefficients

Schatz - Fast solvers for elliptic boundary value problems on domains with grids which are combinatorially and topologically equivalent to regular grids on unions of rectangles.


Lars B. Wahlbin - Superconvergence: Hermite Cubics.

n-th Semiannual Finite Element
Conference to Investigate Research Questions
University of Michigan, Ann Arbor
18-19 May 1984

After a hiatus of more than four years, the Circus returned to entertain Ridley Scott and the other folks at Ann Arbor. Ingrid and Claes Johnson hosted, very graciously, a welcoming party on Thursday evening to put everyone in the right mood for the rigors of Friday when Ivo as usual cracked the whip in the morning. Fifteen speakers then preceded in rapid succession to exhibit their mathematical tumbling in front of an appreciative audience of twenty-two. A break for a massive Afghan-Persian feast occurred Friday evening to counterbalance the rather heavy Swedish accent of this Circus.

The Circus convened in Ann Arbor to kill off problems we harbor in West Engineering. Our brains were a-searing as we found di lemmas with ardor.
Those in attendance

Ridgway Scott
Cees Boom
Jim Dongarra
Clyde Michel
Randolph Bank
Craig Douglas
Dan B. Wollwerth
Richard Cheng
Nilotpal Ghosh
Bill Hager
Rick Faulk
Jim Bramley
O. Tzotzalin
Larry Bales
Charan Gupta
Fabio Milner
Maria Cristina J. Squiff
Mohamed K. ODTA
Mohammad Asadzadeh
Steve Serbin
Titles of talks presented

Scott - "Perspectives in large-scale scientific computation"

J. Douglas - Hermitian methods for mixed method algebraic equations

Bank - An error estimate for the box method for triangular grids

Wahlbin - The smoothing property in nonlinear parabolic systems.

Ghosh - Error estimates in the Boundary Element Method.

Huger - Solving dual variational problems

Bales - On parabolic equations with time dependent coefficients

Gupta - Superconvergence estimates for primal hybrid finite element method for second order elliptic problems.

Mohammad Asadzadeh — "A fully discrete analysis of neutron transport in cylindrical geometry."

Steve Serbin — "Numerical Experiments with a Cosine method for second-order hyperbolic equations with time-dependent coefficients."

Claes Johnson: Error estimates and stepsize control of stiff initial value problems

I. Babuška: Difficulties with discontinuous in the elasticity problem.

J. Bramble — On the construction of preconditioners by substructuring.


O. Widlund — "Solving thebiharmonic Dirichlet problem using other boundary value problems as preconditioners."
Finite Element Circus

University of Maryland

9-10 Nov., 1984

The fall meeting of the Circus was held at the University of Maryland on Nov. 9-10. This was a well-attended Circus with 37 members attending and 26 giving talks. Only a masterful job of organization by Ivo Babuška and his strict adherence to a tight schedule allowed us to get through all the talks, enjoy lunch at the Chinese Pagoda, dinner at Hogado's restaurant, and attend a performance of Shakespeare's "The Tempest" at the Arena theater.

R. Falk contributed the following poem:

You say you need a fast Solver,
But your algorithm is much too slow.
You say you need to move your meshes,
But don't know which way to go.
You say you have a singularity,
But don't understand pollution.
And that the physical quantity of interest
Leads nothing like your approximate solution.
If these are some of your troubles, friend,
There's no need for you to despair.
Just come down to the finite element circus,
And consult the experts there.
ATTENDEES

R. Richard Falk
C. M. Hug
Alan Berger
Doug Arnold
Hannes Karakashian
Vassilios A. Dougalis
Charles Fetdstein
Leon Greenberg
Adam Lutoborski
Ken Hug
Peter Hug
Paul Fredericson
Craig C. Douglas
Mary Hoyle
Wenzhuang Hei
Sanz Junca
T. J. J. J.
Chuan P. Jiupin
Fabris A. Milner
Shagi-P. Shih
Dick Ewing
John Odlum
Bengi Dik
Camilli DiAnzunzi
William Szymczak
Richard C. Morgan
Paola Pietra
Y. Muraya
Ken B. Wahlbin

B. Kellogg
Jim Bramble
Al Salat
R. W...
Mitchell Tschirn
P. Dwyer
Mel Cernert
Jim P. Donges
Manildari 2000
Mary Janet Wheel

Cly Sid Scott
Ridgway Scott
Abdulk Azziz
Larry Bales
Titles of Talks

People: Dependence on the elastic coefficients for a class of anisotropic materials

1. Hayes: An Overlapping-Block iterative Method

Alan Berger: A constrained Minimization Problem Modeling the Orientation Distribution of Rod-Like Particles

Doug Arnold: A new mixed formulation for elasticity


Craig Douglas: A Multilevel Solver for Linear Equations

Mary Morley: Mixed formulation for elasticity

FABIO A. MILNER: A primal hybrid F.E.M. for a quasilinear second order elliptic problem

SHAGI-DI SHIH: Asymptotic analysis of a singular perturbation problem

Bengi Guo: the h-p version of Finite element method

Dick Morgan: Numerical aspects of homogenization

Pavel Pietra: Convergence of the approximate free boundary for a Stefan problem.

Y. Murza: Remarks on singular perturbation problems.

Lars B. Wahlbin: FEM with anisotropic artificial diffusion in convection dominated two dimensional problem.

Larry Bales: Single Step Finite Element Approximations for Nonlinear Second Order Hyperbolic Equations
Chip Eastham  Some Modifications of a Parallel Algorithm for Solving Systems from Galerkin Methods

Mitchell Luskin  Numerical Methods for the mechanics of magnetic recording.

Ricardo Durán  Estimates for piecewise linear approximation for Dirichlet problem using C0/Q1 norms

Jim Douglas  New mixed finite elements

Vaclav Mayer  A FACTORIZATION BASED SOLVER FOR TPBVP’S FOR ODE’S

Manil Suri  Mixed vs Standard Methods

Soren Jensen  Dimensional reduction for some nonlinear problems.

Wenzhuang Gui  Behavior of h, p, h-p extensions of the finite element method in 1-dim case.

Ridgway Scott  Effects of quadrature errors in boundary element methods (joint work with Claes Johnson)

Jim Bramble  A uniformly well conditioned iterative method for solving the Stokes equation and related problems.