

ANNOUNCEMENTS

INTERNATIONAL CONFERENCE ON NUMERICAL METHODS IN LAMINAR AND TURBULENT FLOW

The University of Washington, Seattle, U.S.A.
8-11 August 1983

Objectives

The objectives of this conference are similar to those of the first held in Swansea, 1978, and the second, held at Venice, 1981. Again the main objective is to consolidate the recent advances in the application of numerical techniques, particularly finite difference and finite element methods, to solve laminar and turbulent flow problems. Both techniques have received considerable attention in recent years and their application and development is continually expanding. It is hoped that the conference will provide a forum for numerical analysts to present new numerical methods and applications and experimentalists to present a comparison between measured quantities and calculated values using standard numerical techniques. The subject matter should be of interest to both researchers and industry.

Provisional session headings

Laminar Flow

Lubrication
Turbulent Flow
Boundary Layers
Flow with Separation
Estuary and Coastline Hydrodynamics
Flow in Rivers and Channels
Turbo Machinery
Meteorology
Reactor Technology
Free and Forced Convection
Coupled Conduction and Convection
Turbulent Heat Transfer
Explosions
Scientific and Industrial Applications

Requests for further information should be addressed to

Dr. C. TAYLOR,
Department of Civil Engineering,
University College of Swansea,
Singleton Park,
SWANSEA SA2 8PP, U.K.

FIFTH INTERNATIONAL SYMPOSIUM ON FINITE ELEMENT METHODS IN FLOW PROBLEMS

sponsored by TICOM and held at The University of Texas at Austin

23-26 January 1984

Over the last decade, a series of very successful international symposia has been held on the application of finite element methods to wide varieties of flow problems. In 1984, the fifth such symposium will be held at The University of Texas at Austin, during the period 23-26 January. The objective of the conference is to bring together researchers working in the theory and application of finite element techniques to the analysis of flow problems. The subject areas include theoretical analyses, new methodologies,

Navier-Stokes applications, compressible flows, transport phenomena, geological flow problems, algorithms and computer implementation, non-Newtonian flows and other related areas. The four-day conference program will comprise invited expository lectures, invited special lectures and contributed papers.

Abstracts of approximately 500 words should be forwarded prior to the abstract deadline date: 1 May 1983. All abstracts should be sent to the following address: Finite Element Flow Confer-

ence, Continuing Engineering Studies, ECJ 2.102, The University of Texas at Austin, Austin, Texas 78712, U.S.A.

The deadline for accepted papers is 1 September 1983. Short summary papers will be published in a conference volume and selected papers will be published in the post-conference

volume. The conference will be held at the Joe C. Thompson Conference Center at The University of Texas. The organizers of the meeting are Professors G. F. Carey of TICOM, R. H. Gallagher of The University of Arizona, J. T. Oden of TICOM and O. C. Zienkiewicz, The University of Wales.

INTERNATIONAL CONFERENCE ON NUMERICAL METHODS IN THERMAL PROBLEMS

The University of Washington, Seattle, U.S.A.
2-5 August 1983

Objectives

The objectives of this conference are to consolidate the advances made in the numerical modelling of thermal problems which were presented at Swansea in 1979 and at Venice in 1981. The use of numerical techniques, such as the finite element and finite difference methods, is essential for solving problems of extreme complexity or difficult mathematical representations, which can occur in a wide range of disciplines.

It is expected that this conference will continue the unifying theme of the previous conferences in bringing together engineers and scientists to discuss thermal problems from a diverse spectrum of disciplines and ultimately produce a text on the latest 'state of the art'. Keynote speakers will present lectures on the diverse nature of the problems and the similarities of the solution techniques used would be emphasized.

A provisional list of possible areas of interest is as follows:

Heat Conduction
Phase Change

Heat and Mass Transfer in Porous Bodies
Geothermal Reservoir Simulation
Thermal and Drying Stresses
Industrial and Scientific Applications
Solar Energy
Turbulent Heat Transfer
Fire and Combustion Simulation
Coupled Conduction and Convection
Mathematical and Computational Techniques
Free and Forced Convection
Nuclear Waste Disposal

Correspondence

Requests for further information should be addressed to

Dr. R. W. Lewis
Department of Civil Engineering
University College of Swansea
Singleton Park
SWANSEA SA2 8PP
UK

MAFELAP 1984

Conference on

THE MATHEMATICS OF FINITE ELEMENTS AND APPLICATIONS

Brunel University, 1-4 May 1984

Following the four previous Brunel conferences on The Mathematics of Finite Elements and Applications, a fifth residential conference with the same title will be run at Brunel University at the beginning of May 1984. The aim

will be to bring together again workers from different disciplines whose common interest is finite element methods. The programme will consist of invited lectures, contributed papers and poster sessions.

Topics

The Mathematical Theory of Finite Elements
Engineering and Scientific Applications of Finite Elements
Computational Techniques for the Implementation of Finite Element Methods
Boundary Element Methods and Their Application
The Finite Element/Computer Aided Geometric Design Interface.

Call for papers

A limited number of contributed papers and papers for poster sessions will be accepted for the conference. Persons wishing to read a contributed paper or to have a paper in a poster

session should submit abstracts of not more than two pages in length by the 31 October 1983, indicating the mode of presentation that they would prefer.

Details

Persons wishing further details or submitting abstracts should write to:

The Secretary
The Institute of Computational Mathematics
Brunel University
Uxbridge, Middlesex, UB8 3PH,
United Kingdom.

NEW SOFTWARE AVAILABLE

LSD/FEM: A Library for Software Development in the Finite Element Method

Developed by M. Bercovier, G. Berold, I. Hasbani

(Distributed by Yssoum, Hebrew University of Jerusalem, P.O.B. 4279, Jerusalem 91042, Israel. Price \$250 including postage)

LSD/FEM is a new concept in the Finite Element world. It is a Fortran Library structured and limited to the role of a library *only*. All parameters are explicit, never in common; internal I/O operations are avoided wherever possible. It is a unique tool for the software developer, the FEM teacher and the research student.

At present LSD/FEM includes 4 chapters: solvers, shape functions, Eigenvalues/Eigenvectors and a chapter of miscellaneous utilities.

(a) *Solvers*: Symmetric and non symmetric positive definite matrices stored in skyline form. For each type of matrix, there are two solvers, an *in core* one and an *out of core* one. All the related *service* subroutines are included: skyline organization, boundary value elimination, total stiffness assembly.

(b) *Shape functions*: Limited to the *universal* minimum, these routines can be used in any field (flow, elasticity, heat conduction, etc...). Included are one, two and three dimensional *isoparametric* elements, limited to linear and parabolic Lagrangian (or serendipity) elements. In 2D there is also a 4 to 9 variable node element, in 3D an 8 to 21 node brick and the 27 node full Lagrangian element.

(c) *Eigenvalues and Eigenvectors*: The chapter provides for the solution of the (smallest) eigenvalues/eigenvectors of $Ax - \lambda Mx = 0$ where A is a symmetric positive definite matrix given in skyline form. M can be a diagonal mass matrix or can have the same graph as A . Bathe's subspace iteration method is used with LSD/FEM incore solver.

(d) *Utilities*: This chapter consists of subroutines that are called by others and have simple specific functions such as the (skyline) matrix multiplication of a vector. Also included is an original routine for devising Gauss Legendre integration rules of *any order* in one dimension.

LSD/FEM is used as a development and as a teaching tool. Some modules are used as such (mainly the solvers); others can be 'cannibalized' and part of their Code only used. The detailed documentation included in the coding makes such a step quite easy and error (bug) safe. LSD/FEM is an ongoing project and all funds are used to include new features to be released on a yearly basis. LSD/FEM has been successfully implemented on a wide variety of computers.

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INTERNATIONAL CONFERENCE ON NUMERICAL METHODS FOR TRANSIENT AND COUPLED PROBLEMS

Venice, Italy, 9–13 July 1984

Organizing committee

P. Bettess, E. Hinton, R. W. Lewis
University College of Swansea, U.K.
B. A. Schrefler
University of Padua, Italy

Programme committee

J. H. Argyris, R. W. Clough, M. Fanelli, R. Glowinski, T. J. R. Hughes, U. Meissner, R. Ohayon, A. Peano, O. C. Zienkiewicz

Objectives

The objectives are to consolidate the advances made in the numerical modelling of coupled problems presented at Swansea in 1981 and to consider the wider field of transient problems in general. Recently there have been major breakthroughs in novel schemes for the direct integration of transient problems and new methods such as operator splitting, semi-implicit, implicit-explicit and element-by-element techniques have been introduced. Similar breakthroughs on the solution of coupled problems have taken place.

Call for papers

Abstracts are invited on topics which deal with numerical methods of computation for transient and coupled problems and their appli-

cation. Abstracts of about 500 words to be submitted by 1 July 1983. Authors will be informed about acceptance by 1 August 1983. Final manuscripts are required by 1 December 1983.

Provisional session headings

- Novel time integration schemes
- Fluid-structure interaction
- Soil-structure interaction
- Thermo-mechanical problems
- Fluid transients
- Dynamics of structures
- Electromagnetic transients
- Infinite boundaries
- Transients in geotechnical problems
- Contact/impact
- Seismic analysis
- Damage mechanics
- Blast loading

Abstracts and requests for further information to:

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