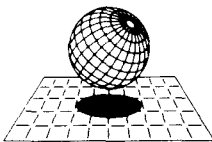


Finite Elements in Fluids

New trends and applications

Part II

**K. Morgan, E. Oñate,
J. Periaux, J. Peraire,
O. C. Zienkiewicz (Eds.)**



**Centro Internacional
de Métodos Numéricos en Ingeniería**

**PINERIDGE
PRESS**



PART II

SECTION 6

ENVIROMENTAL FLOWS

D.L. Marcum and N. P. Weatherill Finite element calculations of inviscid and viscous flow fields about launch vehicle configurations	777
J. P. Bardet and A. Shiv Two-phase instability in porous media	787
S. Chippada, B. Ramaswamy, M. F. Wheeler, L. C. Cowsar and D. M. Tetzlaff Two-dimensional modeling of flow and sedimentation	796
T. Umetsu Applications of moving boundary simulation for river flow due to configuration bank environment	806
Z. Rusakevich Numerical modelling of heat and mass transfer in two-layered aquifer	816
K. G. Schwarz Two-dimensional model of mesa-scale atmospheric processes	825
O. C. Zienkiewicz, M. Huang, B. A. Schrefler and M. Pastor Coupled hydro-mechanical behaviour of saturated and non-saturated soils	834
H. Modaressi and E. Foerster About numerical stability and dispersion in saturated porous media under dynamic loading	836
B. A. Schrefler, L. Simoni and P. Baggio Heat and mass transfer in deformable porous media	846
A. L. G. A. Coutinho, J. L. D. Alves, L. Landau and N. F. F. Ebecken A dynamic mesh partition algorithm for the finite element solution of two-phase immiscible flow in oil reservoirs	856
J. M. Amaya and M. García Galludo Kinetic transformations of brachystochronic stationary fluids, by means of geodesic generators riemann's varieties	866
Z. Denkowski, R. Schaefer and H. Telega On identification problems for prelinear filtration of ground water ..	878
R. Schaefer and S. Sedziwy <i>Filtration in cohesive soils: modelling and solving</i>	887
H. A. Telega Nonlinear programming approach to the inverse problem of water percolation through cohesive soils	892
K. Hatanaka, K. Kojima and M. Kawahara <i>A basic study on identification of aquifer parameters in groundwater hydrology</i>	901
K.-I. Kaneko and K. Kashiwama A three-step Taylor-Galerkin finite element method for orographic rainfall	909
L. D'Alpaos and A. Defina Venice lagoon hydrodynamic simulation by coupling 2D and 1D finite element models	917
J. H. B. de Castello-Branco and J. L. Montiero Fernandes Extensions of the shallow water wave equation for finite element computations	927
P. J. Roache The seco code algorithms for groundwater flow and transport	939
T. Kohl, K. F. Evans, L. Rybach and R. J. Hopkirk <i>Fracture a new tool to simulate coupled processes in geosciences</i>	949
P. L. Betts and A. I. Szyma Improved near ground treatment in finite element simulation of dense gas dispersion	959

A. Tompson, S. Ashby, R. Falgout and S. Smith On the role of high performance computing for simulating subsurface flow and chemical migration	970
L. Zovatto Two finite element models for simulating deep network channels in a tidal lagoon	980
M. Morandi Cecchi, E. Secco and A. Pino Domain decomposition of a finite element model of a lagoon	990
K. Muralidhar Comparison of a variable conductivity formulation with fem in complex geometries	1448
H. Snijders, J. M. Huyghe and J. D. Janssen Triphasic finite element model for the intervertebral disc	1458

SECTION 7

SHALLOW WATER

V. Agoshkov, E. Ovtchinnikov, V. Pennati, D. Ambrosi and F. Saleri Finite element, finite volume and finite differences approximation to shallow water equations	1001
M. Espino, M. A. García and A. S.-Arcilla Practical aspects of the iterative stabilization of a Q1/P0 penalty solution of the shallow-water equations using macroelements	1010
V. Agoshkov, A. Quarteroni and F. Saleri Modified finite element approximation to shallow water equations and stability results	1020
M. Morandi Cecchi, E. Secco and A. Pica Tidal flow analysis with core minimization	1026
G. C. Christodoulou On the stability of finite element shallow water flow models	1037
J. Oyarzo Perez and N. Pavlov Oyarzun Distribution of pollutante thrown in a coast section of punta arenas city	1047
A. Anju and M. Kawahara Optimal control of tidal flow by differential dynamic programming method	1058
C. J. M. Fortes, J. M. A. Covas and J. L. M. Fernandes Harbour resonance and wave refraction-diffraction computations in harbours using the finite element method	1067
M. J. Castro, C. Parés and J. Macías Numerical modelling of the Alboran Sea	1081

SECTION 8

METAL FORMING AND VISCOELASTIC FLOWS

G. Rekers, R. Akkerman and J. Huétink Finite elements simulation of local effects in nonisothermal viscoelastic and viscous flows	1093
V. Ruas and M. A. Silva Ramos A numerical study of viscoelastic flow with differential models	1103
C. Pares, M. Thiriet and F. Hecht Numerical simulation of physiological flows	1113
G. C. Buscaglia and S. D. Felicelli A finite element scheme for viscoelastic fluids	1120
M. Laso, S. Matter, U. W. Suter and H. C. Öttinger Calculation of non-newtonian flow of colloidal dispersions: finite elements and brownian dynamics	1130
F. Debae Mixed finite element methods for solving viscoelastic flows	1140

V. Dina, Ch. Mihailescu and O. Bogdan Numerical analysis by fem method to the burned gas jets in the work of metallurgical furnaces	1150
J. Argyris, G. Beddies, J. Szimmat and E. P. Warnke Numerical simulation of casting processes including phase effects and conductive-convective heat transfer	1159
O. Sævreid Simulation of extrusion combining local grid refinement and lagrangian time-marching	1168
A. Poitou, F. Chinesta, R. Torres and F. Olmos Numerical simulation on reinforced thermoplastic flow in plane molds	1178

SECTION 9

FREE SURFACE AND MOVING BOUNDARY FLOWS

A. Allievi A Galerkin formulation in space with a semi-implicit semi-Lagrangian scheme in time for nonlinear free surface potencial flow	1191
T. Nakayama and M. Mori Finite element approaches to transient free-surface problems in hydrodynamics	1201
E. A. Toorman Simulation of free surface flow of mud	1211
L. C. Dutto, W. G. Habashi and M. Fortin A parallelizable ILU(0) preconditioner for the compressible and transonic 2D Navier-Stokes equations	1221
S. Mallick and C. T. Shaw Segregated finite element algorithms on massivel parallel machines ...	1231
H. U. Akay, A. Ecer and O. Selcuk Applications of a parallel solution algorithm for transonic flow calculations around oscillating airfoils	1241

SECTION 10

OPTIMAL DESIGN

F. Beux, N. Marco, H. Guillard and A. Dervieux Multilevel optimization: application to P.D.E. solution and to shape optimum design	1253
G. Bugeda, E. Oñate and D. Joannas Mesh adaptivity in shape optimization. Application to incompressible potential flow problems	1262
M. Kawahara and Y. Shimada Optimal control with constraint on the control value to operate water gate of dam	1272
Z. Mrsa and L. Sopta Optimal shape design of francis turbine spiral casing	1281
C. McCreavy and J. R. Nunhez Heat transfer in jacketed stirred tank reactions	1290
K. Sasaki and M. Kawahara Stochastic optimal control of dam gate	1300

SECTION 11

ADVECTION DIFFUSION

D. Funaro and A. Russo Approximation of advection-diffusion problems by a modified legendre grid	1311
--	------

P.R. Schunk, A. J. Hurd, C. J. Brincker and R. R. Rao Finite element modeling of evaporation and condensation during sol-gel film and fiber formation	1319
V. Selmin and L. Quartapelle A unified approach to build artificial dissipation operators for finite element and finite volume discretisations	1329
J. Donea A review of upwind finite elements	1342
R. R. Blagoeva A numerical approach to solutions of a class of diffusion and sorption problems	1346
G. Alduncin Resolvent methods for optimal control of advection-diffusion problems	1356
A. Peters Nonsymmetric CG-Like schemes and the fe solution of the advection- dispersion equation	1364
L. Quartapelle and V. Selmin High-order Taylor-Galerkin methods for nonlinear multidimensional problems	1374
G. S. Herrera and I. Herrera Application of LAM to advection dominated transport	1428
I. Herrera Innovative discretization methodologies based on LAM	1437

SECTION 12

WAVE EQUATION

I. L. Sofronov Condition of absolute transparency on sphere for wave equation	1387
J. Freund A weak form starting point for ODE integration schemes	1397
M. Sakuraba and K. Kashiwama Stochastic finite element analysis of wave diffraction-refraction considering the indeterminacy of input data	1405
J. Avrashi and R. D. Cook Improved eigenvalues and error estimation for acoustics problems	1415

SECTION 13

MISCELLANEOUS

M. J. Crochet Finite elements for polymer flow: towards realistic simulations	1425
G. S. Herrera and I. Herrera Application of LAM to advection dominated transport	1428
I. Herrera Innovative discretization methodologies based on LAM	1437
H. Snijders, J. M. Huyghe and J. D. Janssen Triphasic finite element model for the intervertebral disc	1448
K. Muralidhar Comparison of a variable conductivity formulation with fem in complex geometries	1458
R. D. Henderson and G. E. Karniadakis Unstructured spectral element methods for the incompressible Navier- Stokes equations	1467