

CONTENTS

PREFACE

VOLUME I

SECTION 1 Phase Change Problems

- | | | |
|----|--|----|
| 1. | J.M. SULLIVAN, Jr. and D. R. LYNCH
"Grid generation for dendritic growth simulations
on deforming elements" | 5 |
| 2. | M.P. KANOUFF
"Weld pool modeling" | 15 |
| 3. | D. LOYD and B. KARLSSON
"Heat transfer at cabinet walls containing phase
change material" | 27 |
| 3. | J. CALDWELL
"Numerical solution of one-dimensional
melting/solidification model problems" | 39 |
| 5. | R.O. STAFFORD, J.W. KLAHS, D.F. PINELLA
"Numerical Methods for solidification simulation" | 62 |
| 6. | M. REZAYAT and T.E. BURTON
"Combined boundary-element and finite-difference
simulation of cooling and solidification in
injection moulding" | 84 |
| 7. | M.J. BURTON and R.J. BOWEN
"Modelling ice plug formation in cryogenic
pipe freezing" | 96 |

8.	R. HAMAR, and S. THIBAUT "Modelization of thermal transfer in D.T.A. cell"	108
9.	N. KITAHARA, H. YANO and A. KIEDA "Approximate Solutions with heat polynomials for Stefan problem"	120
10.	B. CARRUPT. J.-L.DESBIOLLES and M. RAPPAZ "FDM simulation of the surface treatment of materials by laser"	132
11.	C.A. Van der STAR "The application of the enthalpy method to phase change problems in annuli"	143
12.	M. CARMIGNANI, A. MASNATA, V. RUISI, A. TORTORICI "A mathematical model of thermal cycles in welding"	154
13.	Z. ABDULLAH and M. SALCUDEAN "Computation of casting solidification in the presence of natural convection"	164
14.	S. LIN, C.K. KWOK, W.L.DAI "A study on the short-time starting temperature profile for numerical solution of phase change problems"	176
15.	A.F.A. HOADLEY, T.J. SMITH and D.M. SCOTT "The incorporation of natural convection effects in solidification simulation"	185
16.	A.K. PANI and P.C. DAS "Finite element approximation to a class of one dimensional ablation problems"	198

SECTION 2 Heat Conduction

1.	BENGT SUNDEN "Numerical prediction of transient heat conduction in a multi-layered solid with time-varying surface conditions"	207
2.	J.L. WEARING, C. PATTERSON, M.A. SHEIKH and A.G. ADBUL RAHMAN "A regular indirect boundary element method for heat conduction"	219

3.	M.S. Ingber and A.K. MITRA "Solution of the transient heat conduction problem in zoned-homogeneous media by the boundary element method"	231
4.	S.M.CARTER, R.F. BARRON, R.O. WARRINGTON and R.P. KOBS "The boundary element method applied to cryosurgical probe tip design"	241
5.	C.-C WONG and R. K-T. WONG "Numerical methods for solving the network model of three-dimensional diffusion problems"	253
6.	D. P. UPDIKE and A. KALNINS "Heat conduction in shells of revolution"	265
7.	D.A. KOUREMENOS, K.A. ANTONOPOULOS "Numerical simulation of the thermal problem in hyperthermia treatments"	276
8.	LIU GAO-LIAN and ZHANG DAO-FANG "Numerical methods for solving inverse problem of heat conduction with unknown boundary based on variational principles with variable domain"	284

SECTION 3

Natural and/or Forced Convection

1.	K.H. WINTERS "Oscillatory convection in crystal melts: The horizontal Bridgman process"	299
2.	A. HAHRMANN and W. NITSCHKE "Comparative numerical and experimental investigation on transient temperatures in convec- tively heated non-homogeneous structures"	311
3.	T. FUSEGI and B. FAROUK "Turbulent natural convection-radiation inter- actions of a non-gray gas in a square cavity"	321
4.	C. NONINO and S. DEL GIUDICE "Turbulent forced convection in two-dimensional recirculating flows"	332
5.	Y. LE PEUTREC and G. LAURIAT "Practical evaluation of improved upwind finite difference schemes for natural convection in enclosures"	344

6. P.H. OOSTHUIZEN and J.T. PAUL 356
"Natural convective heat transfer across a cavity with elliptical ends"
- 7 DANIEL DICKER 368
"A mathematical study of a radial-wall heat exchanger"
8. I.M. RUSTUM and H.M. SOLIMAN 380
"Developing heat transfer in internally finned tubes"
9. E. ZIMMERMAN and S. ACHARYA 392
"Natural convection in an enclosure with a vertical baffle"
10. T. ITO and M. YAMAGUCHI 404
A numerical study of turbulent forced-convection heat transfer to supercritical helium"
11. C.T. NGUYEN and N. GALANIS 414
"Combined forced and free convection for the developing laminar flow in horizontal tubes under uniform heat flux"
12. LAI-CHEN CHIEN 426
"Forced convection heat transfer from the flow around an impulsively started sphere"
13. T. KOBAYASHI and Y. MORINISHI 437
"A numerical experiment of incompressible turbulent swirling flow in rectangular straight pipe"
14. P. ANDRE, J. BATINE and R. CREFF 448
"Study of the thermal fluid field for pulsed flows with compressible fluids"
15. J.C. DUH and WEN-JEI YANG 459
"Effects of Prandtl number on transport phenomena in evaporating sessile drops"
16. J. MAQUET, G. GOUESBET, A. BERLEMONT 472
"A computer code for natural convection in an enclosed cavity with a free surface"
- 17 K. NOTO and R. MATSUMOTO 484
"Breakdown of the Karman vortex street due to natural convection (case from an elliptical cylinder whose major axis oriented at right angle to main stream)

18. N. TOSAKA and H. FUKUSHIMA 500
"Numerical simulations of laminar natural convection problems by the integral equation method"
19. R.W. KNIGHT and M.E. CRAWFORD 512
"Simulation of convective heat transfer in pipes and channels with periodically varying cross-sectional area"
20. D. KUHN and P.H. OOSTHUIZEN 524
"Transient three-dimensional natural convective flow in a rectangular enclosure with two heated elements on a vertical wall"
21. S. LAVOIE, T.H. NGUYEN and C.A. LABERGE 536
"Heat transfer by natural convection between two concentric cylinders"
22. P.GUANG MAO and T. HUNG NGUYEN 547
"Higher-order accurate numerical solution to the problem of natural convection in a rectangular cavity"
23. M.A. KALAM and R. KUMAR 559
"Numerical study of laminar natural convection in vertical annuli"
24. K. NOTO and R. MATSUMOTO 571
"Three-dimensional natural convection heat transfer from a single plate"
25. A.N. THORNHILL and E.K. GLAKPE 586
"Turbulent natural convection in boundary-fitted coordinates"
26. T. FUJII, S. KOYAMA and K. SHINZATO 597
"Forced convection heat transfer inside a locally heated tube - numerical analysis as a conjugated problem"
27. S. KOSHIZUKA, Y. OKA and Y. TOGO 609
"An evaluation of three filtering methods applied to three higher-order difference schemes of convection"
28. P. ROSA and F. PIRONTI 621
Heat transfer natural convection steady state simulation by finite elements between vertical enclosed concentric cylinders"
29. A.S. BARTOSIK, R. SOBOTINSKI and A.J. WANIK 632
"Numerical prediction of heat transfer in fully developed pulsating turbulent flow"

30. A. MOJTABI, D. QUAZAR and M.C. CHARRIER-MOJTABI
"An efficient finite element code for 2D steady
state porous annular layer"

644

SECTION 4

Heat and Mass Transfer

1. L. IMRE, A. BITAI, Cs. HORVATH, S. SZENTGYORGYI & L. Banhidi 657
"Thermal analysis of human body - clothing, environment system"
2. J. A. TINKER 669
"Modelling the thermal conductivity of multiphase materials containing moisture"
3. G.J. ANDERS, H.S. RADHAKRISHNA, J.A. ROIZ 681
"Numerical solutions to the heat transfer problem in the vicinity of underground power cables"
4. V.R. VOLLER 693
"A numerical method for analysis of solidification in heat and mass transfer systems"
5. R. KOHONEN, T. OJANEN 705
"Non-steady-state coupled diffusion and convection heat and mass transfer in porous media"
6. L. ROBILLARD, H. WANG CHONG and P. VASSEUR 717
"Multiple steady-states in a confined porous medium with localized heating from below"
7. T. KODAMA and S. KOTAKE 728
"Coarse-fine mesh method for locally complex flows of heat and mass transfer"
8. M. NOVAKOVIC, A. VEHAUC and Z. KOSTIC 738
"Steady alternating state (SAS) numerical method for determination of heat and mass transfer between fluid streams"
9. A.M. CRAWFORD, H.S. RADHAKRISHNA and K.C. LAU 749
"Application of the integrated finite difference technique to heat transfer through unsaturated particulate media"

10.	G.A. CLUTE and A.M. CRAWFORD	761
	"SFM: A symmetrical four-well ates model"	
11.	X. ZHANG, T. HUNG NGUYEN, R. KAHAWITA and PU WANG	773
	"Spectral and spectral-finite difference methods in wavenumber prediction of penetrative convection"	
12.	F.C. LAI, F.A. KULACKI and V. PRASAD	784
	"Numerical study of mixed convection in porous media"	
13.	N. KLADIAS and V. PRASAD	797
	"Numerical study for inertia and viscous diffusion effects on Bernard convection in porous media"	
14.	D.A. KOUREMENOS, K.A. ANTONOPOULOS	811
	"Finite-difference solution of the transient bioheat transfer equation during local hyperthermia in inhomogeneous tissues containing arteries and veins"	
15.	B. ZAPPOLI, C. MIGNON and N. MATHE	821
	"A pseudo compressible method for computing cavity flows with surface reaction"	
16.	D.A. KOUREMENOS, J.G. KOULIAS AND K. A. ANTONOPOULOS	833
	"Heat and mass transfer in vertical annular two-phase counter-flow "	

SECTION 5

Fire and/or Combustion Simulation

1.	T. NAKAMURA, T. OMORI, K. YASUSAWA, I. NAKAMACHI and H. TANIGUCHI	845
	"Radiative heat transfer analysis in a forge furnace"	
2.	T.K. PHUOC and P. DURBETAKI	857
	"Modeling mechanism of ignition phase transition"	
3.	A. K. GUPTA and D.G. LILLEY	869
	"The role of diagnostics for improved simulation of practical flowfields"	
4.	L. POST	884
	"A mathematical model of the combustion-chamber in a glass-furnace"	

5. T. SANO and S. KOTAKE 896
"A rational algorithm for chemical kinetics;
calculation of combustion flows"
6. NEVIN SELCUK 907
"Finite difference solution of three dimensional
flux equations for radiative transfer in furnaces"
7. N. LARAQUI and J. BRANSIER 918
C. VOVELLE, J.L. DELFAU and M. REUILLON
Modelling of the thermal degradation of vertical
PMMA slabs"

