

CONTENTS

Preface	v
Scientific Committee	xiii
Organizing Committee	xiii
Local Steering Committee	xiii
Contributors	xiv
List of Participants	xv
 Computer Simulation	
Role of computer simulation in scientific research and engineering development T. Kawai	3
 Computational Electromagnetics	
Indirect calculation of transient eddy current in special devices A. Krawczyk and Z. Weselucha	21
Computer simulation of effect of magnetic inhomogeneity on magnetization reversal by curling mode in sintered Nd-Fe-B magnet T. Ohashi and H. Fukunaga	27
Reality of chaos in 3-dimensional hysteretic circuits T. Saito	37
Magnetic field analysis including uncertainty M. Enokizono, T. Todaka and H. Miyazaki	45
Application of approximate magnetic characteristics for finite element method E. Itoda, Y. Ishihara and T. Todaka	53
Axisymmetric analysis of electromagnetic fields using boundary element method T. Honma, H. Igarashi, A. Tsuchiya, M. Tsuchimoto and K. Miya	59
Analytical analysis of eddy current detection of cracks in solid cylinder K. M. Gawrylczyk, M. Gramz, S. Gratkowski, R. Sikora and M. Ziolkowski	71
Application of the stream function to the dual mesh discretization for semiconductor device equations T. Kojima, Y. Saito and R. Dang	79
Development of parallelized codes for ion beam extraction simulations S. Ido and M. Kubota	89
Calculation method simulating operation of the SF6 self-compression circuit-breaker W. Poniecki and P. Tucholski	101
Optimal design with axisymmetric boundary element method M. Enokizono, T. Todaka, M. Nakamura and S. Nagata	111

Magneto-Solid Mechanics

Magnetoelastic evaluation of grain heterogeneity in solids B. Maruszewski	123
Experiments and numerical analysis of iron loss of a ferromagnetic thin plate M. Tsuchimoto, M. Hashimoto, A. Yamashita and K. Miya	137
On the dynamics of a non-linear vibrating system with a retardation Y. Tsuda, H. Tamura, A. Sueoka and T. Fujii	145
Variational approach to micropolar magnetoelasticity J. P. Nowacki and Y. Shindo	155
Measurement of vibration of piezoelectric devices with an SEM H. Ishikawa, S. Okuma and Y. Uchikawa	167
Crack modeling problem in eddy current non-destructive testing Y. S. Sun, M. J. Chen, H. Y. Lin, G. S. Zhang and W. Chen	173
Dynamic behavior of shallow arch under electromagnetic force considering coupling effect T. Takagi, Y. Mohri and J. Tani	183

Magnetic Engineering

Magnetic properties of bent amorphous ribbons A. Saito, D. B. O. Konditi, K. Yamamoto, T. Tamura and K. Ebisutani	197
Magnetic anisotropies in iron-based amorphous ribbons (Metglas) T. Sasaki, H. Nose and S. Takada	207
Domain walls in low dimensional uniaxial ferromagnets T. Lenkowska-Czerwinska	215
Large stress effects on magnetic properties of amorphous ribbon A. Saito, K. Yamamoto, D. B. O. Konditi, T. Tamura and K. Ebisutani	221
Magnetic permeability disaccommodation at 230K - 400K in rapidly quenched Si-Fe Ribbons W. Ciurzynska, J. Zbroszczyk, B. Wyslocki, Y. Yamashiro and K. Narita	229
New method of designing induction heaters based on field and circuital approach T. Skoczkowski	237
On the stability of flexible rotor system with active magnetic bearings S. Morii, N. Kawada and K. Katayama	249
A design method for high frequency inductors Y. Ohta, H. Kakehashi, M. Fukuhara and H. Fukunaga	261

Wave Propagation

The method of inverse problems solution for wave phenomena in a medium subject to electromagnetic fields Cz. Rymarz	275
Electromagnetic wave interaction with a chiral slab M. Tanaka	285
Nondestructive residual stress measurement in steel using magnetoacoustic interactions T. Yamasaki, M. Hirao and H. Fukuoka	295
Bulk acoustic waves in piezoelectric crystals TeO_2 R. Kotowski	307
Linearized equations for surface acoustic waves in stressed media D. Gafka	319
Ultrasonic waves in deformed magnetoelastic materials under strong magnetic field E. Matsumoto	331
Ultrasonic evaluation of heat treatment in magnetoelastic ferromagnets S. Motogi and T. Fukuda	339
Plasma Physics	
Some results in nonlinear plasma theory E. Infeld and G. Rowlands	347
Alfven soliton and optical soliton Y. H. Ichikawa	355
Boundary element analysis of electromagnetic and flow fields in MPD thrusters T. Honma, H. Igarashi, H. Itoh and S. Sawai	365
Influence of gas flow rate on spatial distributions of metastable argon atoms in D.C. glow discharge M. Hamamoto	377
Singular perturbation in laser sustained plasma Z. Peradzynski	385
Solitons and vortices in unstable plasmas M. Kono	393
Nonlinear phenomena in unstable plasmas M. Tanaka	405
Energy deposition by heavy ions in partially ionized plasmas S. Karashima	417
Simulations of plasma in a magnetron sputtering device S. Ido and K. Sakamoto	427
Author Index	437