

Control and Cybernetics

vol. **34** (2005) No. 1

CONTENTS

Preface to Special Issue	5
M. BENDSØE, E. LUND, N. OLHOFF, O. SIGMUND: Topology optimization – broadening the areas of application	7
A. HENROT, J. SOKOŁOWSKI: Mathematical challenges in shape optimization	37
G. ALLAIRE, F. de GOURNAY, F. JOUVE, A.-M. TOADER: Structural optimization using topological and shape sensitivity via a level set method	59
S. AMSTUTZ, I. HORCHANI, M. MASMOUDI: Crack detection by the topological gradient method	81
D. BUCUR: How to prove existence in shape optimization	103
M. DAMBRINE, G. VIAL: Influence of a boundary perforation on the Dirichlet energy	117
M.C. DELFOUR, J.-P. ZOLÉSIO: Shape identification via metrics constructed from the oriented dis- tance function	137
J.-A. DÉSIDÉRI, J.-P. ZOLÉSIO: Inverse shape optimization problems and application to airfoils	165
K. EPPLER, H. HARBRECHT: A regularized Newton method in electrical impedance tomogra- phy using shape Hessian information	203
C. GRACZYKOWSKI, T. LEWIŃSKI: The lightest plane structures of a bounded stress level transmit- ting a point load to a circular support	227

X. GUO, K. ZHAO, M.Y. WANG: A new approach for simultaneous shape and topology optimization based on dynamic implicit surface function	255
J. HASLINGER, J. MÁLEK, J. STEBEL: A new approach for simultaneous shape and topology optimization based on dynamic implicit surface function	283
M. HINTERMÜLLER: Fast level set based algorithms using shape and topological sensitivity information	305
W. HORN, J. SOKOLOWSKI: A model for passive damping of a membrane	325
A.A. NOVOTNY, R.A. FEIJÓO, C. PADRA, E. TAROCO: Topological derivative for linear elastic plate bending problems	339
J.R. ROCHE: Adaptive Newton-like method for shape optimization	363