

Table of contents

Preface	IX
 <i>1. Mechanics of structures</i>	
Application of topological constraints to structural optimization of thin-walled structures <i>T. Kuczek</i>	3
Multi-load truss topology optimization using the adaptive ground structure approach <i>T. Sokół</i>	9
Stability and load bearing capacity of a truss with elastic braces <i>M. Krajewski & P. Iwicki</i>	17
Local buckling and post-buckling investigation of cold-formed self-supported elements <i>R. Walentyński, R. Cybulski & K. Koziel</i>	23
Nonlinear stability analysis of elastic-plastic conical shells with shape imperfections <i>J. Zielnica</i>	39
Carbon-epoxy/foam panel for protective aims – computational and experimental study <i>Ł. Mazurkiewicz, J. Małachowski, M. Klasztorny, D. Kołodziejczyk, K. Damaziak & P. Baranowski</i>	49
<i>hp</i> -adaptive finite element analysis of thin-walled structures with use of the numerical tools for detection and range assessment of boundary layers <i>Ł. Miazio & G. Zboiński</i>	57
<i>hp</i> -adaptive finite element analysis of thin-walled structures with use of the shell-to-shell transition elements <i>M. Zielińska & G. Zboiński</i>	63
Usability of numerical models for live load distribution in a composite slab bridge deck <i>J. Hołowaty</i>	73
Comparison of simulation results for 3D punching shear problem <i>A. Wośatko, J. Pamin & M.A. Polak</i>	79
Eigenvalue reanalysis of modified buildings using combined approximations method <i>K. Kuźniar & M. Zajac</i>	89
Load carrying capacity of RC beams strengthened by pre-tensioned CFRP strips <i>I. Jankowiak & A. Madaj</i>	95
Modeling and analysis of free vibration of steel-concrete composite beams <i>A. Pelka-Sawenko, M. Abramowicz, T. Wróblewski, S. Berczyński & M. Szumigala</i>	103
Accuracy of cross-section stress numerical integration by boundary integration formulae <i>A. Matuszak & P. Pluciński</i>	111
Parameter identification in FEM models of thin-walled purlins restrained by sheeting <i>K. Rzeszut, A. Garstecki & A. Czajkowski</i>	121
 <i>2. Damage and contact mechanics</i>	
Crack propagation modelling in XFEM with double enriched nodes <i>P. Stąpór</i>	131

Two-dimensional FE simulation of cracking caused by expansion of corrosion products <i>M. German & J. Pamin</i>	139
Analysis of cohesive crack coupled with thermoelasticity <i>J. Jaśkowiec</i>	149
Damage detection in truss structure being the part of historic railway viaduct using wavelet transformation <i>A. Knitter-Piątkowska, M. Gumiński & M. Przychodzki</i>	157
Dynamic contact modelling between two bodies with significantly different stiffness <i>P. Baranowski, J. Małachowski, T. Niezgoda, Ł. Mazurkiewicz & K. Damaziak</i>	165
Thermoelastic rolling contact problems for a multi-layer structure <i>A. Chudzikiewicz & A. Myśliński</i>	173
Contact between 3-D beams with deformable circular cross-sections <i>O. Kawa & P. Litewka</i>	183
Numerical analysis of frictionless contact between almost conforming beams <i>P. Litewka</i>	191
 3. Material modelling	
Mechanics and thermodynamics of surface growth: Comparison of different approaches <i>J.F. Ganghoffer</i>	203
Two-phase isotropic composites with prescribed bulk and shear moduli <i>T. Łukasiak</i>	213
Topology optimization of the effective thermal properties of two-phase composites <i>M. Nienartowicz & T. Stręk</i>	223
Application of the MFS for 3D elastostatic problems – location of the sources and condition number analysis <i>B.T. Maruszewski, G. Sypniewska-Kamińska & T. Walczak</i>	237
Modeling of the behavior of an elastic body with slim cavities filled with compressible liquid or gas <i>K.I. Shumelchuk</i>	245
Energy flow analysis in multi-material structures <i>J. Korta & T. Uhl</i>	251
Deflection analysis of thin elastic FGM composite plates by meshless methods <i>V. Sladek, J. Sladek & L. Sator</i>	257
Experimental and numerical evaluation of mechanical behaviour of composite structural insulated panels <i>Ł. Smakosz & I. Kreja</i>	269
The trial of optimal strengthening of composite beams <i>P. Szewczyk & M. Szumigala</i>	277
Efficient methods for optimal space filling in model reduction techniques <i>V. Buljak & T. Garbowski</i>	285
Mixed experimental/numerical methods applied for concrete parameters estimation <i>T. Gajewski & T. Garbowski</i>	293
Experimental determination and application of critical void volume fraction f_c for S235JR steel subjected to multi-axial stress state <i>P.G. Kossakowski & W. Wciślik</i>	303
The FEM analysis of pressure installation elements after simulated accidental overheating <i>P. Szabracki, M. Jaskólski, T. Lipiński & A. Kaczmarek-Kacprzak</i>	311
Entropic thermoelasticity for large deformations and its AceGen implementation <i>B. Wcisło & J. Pamin</i>	319

<i>4. Coupled problems, heat transfer and biomechanics</i>	
A posteriori error estimator and <i>h</i> -adaptive finite element method for diffusion-advection-reaction problems <i>O. Ostapov, O. Vovk & H. Shynkarenko</i>	329
Hierarchical models for adaptive modelling and analysis of coupled electro-mechanical systems <i>G. Zboiński</i>	339
Corrected shape functions for six-node triangular element for heat conduction <i>P. Jarzębski & K. Wiśniewski</i>	345
Numerical analysis of tissue heating using the generalized dual phase lag model <i>E. Majchrzak & Ł. Turchan</i>	355
Modelling of transient heat transport in one-dimensional crystalline solids using the interval lattice Boltzmann method <i>A. Piasecka-Belkhat & A. Korczak</i>	363
Turbulent heat transfer in a rotating cavity <i>E. Tulisza-Sznitko & K. Kielczewski</i>	369
Application of the method of fundamental solutions and the radial basis functions for peristaltic flow analysis <i>J.K. Grabski, M. Mierzwiczak & J.A. Kołodziej</i>	379
The combined model of ventilation and decompression <i>R. Kłos</i>	387
Simulations of ultrasonic guided waves with use of combined Finite Element and Finite Difference Methods <i>M. Rosiek, A. Martowicz, K. Filipek, M. Mańka, P. Paćko, T. Uhl & T. Stepinski</i>	393
Author index	399