

TABLE OF CONTENTS

(Alphabetic ordering according to the first author.)

KEYNOTE LECTURES

Bittnar Z.: Parallel computing in mechanics	15
Petrlík J.: Fifty years since the production beginning in the joint-stock company ŽĎAS, Žďár nad Sázavou	16
Pražák J.: Lubrication of artificial joints - an essentially interdisciplinary problem	18
Rosenberg J.: Biomechanics and computational mechanics - main challenges	20

LIST OF PAPERS

Balda M.: Identification of nonlinear damping of blades	25
Ballo I., Chmúrny R.: Flexural vibrations of elastic rotor with nonlinear boundary conditions and limited power supply	27
Bayer Z.: Some remarks on collapse-models of cavitation bubbles	29
Beran V., Švancara P.: Experimental identification of coupling loss factors used in sea	31
Bielak O., Bína V., Masák J., Korouš J.: Probabilistic lifetime assessment of the high pressure steam piping	33
Blažek A.: Rolling of beams in a reversing tandem group in the universal stand	35
Bodnicki M., Czerwic W., Szykiedans K., Pochanke A.: Transducers and meth- ods for torque measurement during testing of stepping motors	36
Brožková K., Pásek M., Šlichta J.: The quantitative exploration of refractory period in human atrial cells	38
Březina T., Ehrenberger Z., Kratochvíl C.: Reinforcement learning model: control of nonlinear and unstable processes	40
Bubák A.: Simulation models of vibration of one-dimensional continuum for time- domain analysis	42
Burša J., Reinisch M., Pešlová F., Janíček P.: Experimental – computational analysis of adhesion and fracture in a composite "rubber – steel wire rope"	44
Constantinescu D.: Thermodynamic of burned gases in continuous furnaces for rolling mills	46
Čech J.: Mechanical properties of ductile iron made in ŽĎAS a.s. in dependence on pearlite content and thickness of test sample	48
Čulík J.: Stress state at femur and tibia under orthese effect	50
Damašek A., Burda P.: Interaction of viscous incompressible fluid and elastic vocal folds	52
Daněk V.: Application of the simplified computational model for analysis of airplane dynamic stability	54
Dedouch K., Horáček J., Vampola T., Kršek P., Švec J.: Design of finite element models of male vocal tract	56

Dobiáš Š. : Possibilities of objects linear speed measurement on production lines	58
Doležal Z., Široká V. : Internal excitation with high frequency in advanced gears with multiple tooth pairs mesh	60
Dupal J., Kuruc T. : Influence of periodically changing parameter of gear mesh to dynamic behaviour and stability of car gearbox	62
Dvořák R. : Separation in high speed internal flows	64
Ehrenberger Z., Březina T., Kratochvíl C. : Mobile robots structural optimization	66
Ficek F., Martínek L., Vaverka L. : Heated ingot transport - theory and practice	68
Filip P. : Oscillatory flow of polymer blends during extrusion	70
Fischer C., Náprstek J. : Arma model as seismic excitation	71
Florian Z., Kotek V., Wendsche P. : Lumbar vertebra with norian	73
Frankowski S., Topoliński T. : External stabilizer to small bones – description of the operation, workings in static load and results of clinical research	75
Fuis V., Ochranová M. : Stress and reliability analyses of hip joint endoprosthesisi ceramic head under oblique loading	77
Gajdoš L., Micka M. : The load-carrying capacity of a cylindrical shell with corrosion damage	79
Grepl R., Ondrušek Č. : Using of artificial intelligence methods for control of manipulators with rotary arm	81
Gröger R., Knésl Z. : Two-parametric characterisation of a crack growing in the vicinity of the material interface	83
Hajšman M., Švígler J. : Introduction into numerical computation of the inviscid compressible fluid flow in region with non-stacionary boundary	85
Heger J. : Solution of the inverse heat transfer problem in the mold wall at concasting	87
Hejman M., Kepka M., Polach P. : The plane stress analysis of the ŠKODA 21 Ab bus suspension beam	89
Hlaváček M. : Synovial fluid thixotropy in squeeze-film lubrication of the human synovial joint	91
Holka H., Peszyński K. : Modelling and analysing of the transverse vibrations of the tractor trailer	93
Hora P. : Matrix techniques for modeling stress waves in multilayered media	95
Horáček J., Švec J., Veselý J., Vilkman E., Klepáček I. : Measurement of the vocal-fold vibration	97
Hortel M., Škudrová A. : Damping influence on the qualitative properties of nonlinear systems with parametric nonlinearities	99
Hostička P. : The interaction solution between air flow and vocal cords by means of finite element method	101
Houfek L. : Possibilities of modelling of quality changing of liquid	102
Houška P., Lojek O., Singule V., Březina T. : Controls and sensoric system the mobile robot OMR III	104
Hrubý J. : Does the forest echoe the same you shout at it? (an application of a controlled wave reflection to nucleation research)	106
Hudec J., Kovanda M. : Analysis of mechanical characteristics of prosthesis with respect to clinical experiences	108
Hutař V., Knésl Z. : The effect of V-notch on the propagation rate of a fatigue crack	110

Chára Z., Vlasák P.: Influence of bridge structures on river flow	112
Iván L., Kubáček K., Malenovský E.: "RotorDynamics For ANSYS" a new program for rotordynamics analysis	114
Janda B., Zajíc V.: Carrying roller stress-state analysis of conveyer routes	116
Janiček L., Petruška J.: Computational simulation of forward extrusion	118
Janíček P., Fuis V., Pešlová F.: Computational simulation of the influence of material porosity on test specimen behaviour	120
Janotková E., Pavělek M.: Research of free non-isothermal air-jet shapes	122
Jaroš M., Charvát P., Orel V.: Investigation of thermal conditions in solar air collectors under natural convection	124
Ježdík R., Landa M.: Generation of elastic waves by moving source	126
Kafka V.: Rheological processes in the surface layer of articular cartilage under loading	128
Kalous J.: A simple simulation model of an injection engine for electric aggregates	130
Katolický J., Pospíšil J., Jícha M.: CFD prediction of air quality in the area between two city road tunnel outlets considering moving cars	132
Klášterka H.: Some problems of dynamical and acoustical behaviour of tube bundles	134
Knoflíček R.: Assessment of technical level of mobile robots omni-directional wheels	136
Kolář V., Filip P.: Axisymmetric wall and liquid jets with swirl	138
Konečný V.: A procedure for flow cross-sections calculation in ejector and its pipe system	140
Kotek V., Pešlová F., Reinisch M., Janíček P., Burša J.: Experimental investigation of constitutive characteristics of EUCOR material	141
Koudelka P., Koudelka T.: On lateral pressure at rest of granular materials	143
Kozánek J., Scopel D., Svoboda R., Šafr M.: Modal and spectral properties of the rotor on permanent magnet bearings	145
Krásný I., Leština J., Plešek J.: Buckling of shells by FEM	147
Krejčí P., Houfek L.: Influence of temperature on behaviour of magnetic drive with permanent magnets	149
Krejčí V., Jícha M.: CFD modeling of the radially symmetric reinforced exhaust system (REEXS)	151
Kršek P.: New opossibilities of creating FEM models from CT/MR data	153
Kruis J., Bittnar Z.: Influence of subdomain shapes on solution of equation systems	155
Kugblenu M., Procházka P.: Rock bumps during mining	157
Lísek M., Kozák V.: Charpy V-notch impact test: modelling and experiment	159
Loudová J., Mevald J., Šklíba J.: Subharmonic resonance of some vibroisolated system	161
Macura P.: Force conditions at cross rolling	163
Makovička D., Makovička D. jun.: Analysis of reasons for RC hall roof truss breakdown	164
Markov P., Gregor J., Friedl P., Lindnerová K.: Design analysis of stud tensioner of nuclear reactor main flange joint	166
Materna A., Oliva V., Michlík P.: Mandrel coldworking: computation of residual stresses and fatigue crack growth retardation	168

Maxa J., Horák V., Dvořák I.: Thermodynamic processes and dynamic effects model of two-phase fluid outflow consequent upon the pressure vessel break down	170
Mazánková M., Hloušek J.: Contribution to computations of temperature field of aluminium casting	172
Melcer J., Papán D.: Dynamic analysis of a bridge structure	174
Moláček L.: Stress and strain analysis of construction parts made from composite materials	175
Morávka Š.: Numerical and experimental modelling of the elastic wave propagation in the shaft with offsets. Affecting of measurements by transducer's presence.	177
Musil J., Leitermann D., Pražák J.: Circuit resistance modeling in failing heart rotary pump support	178
Musil M.: Crack detection in rotating machine	180
Nagy I.: Medical image segmentation based on computing of image characteristics	182
Náhlík L., Kněsl Z.: Influence of grain orientation on threshold values of short fatigue	184
Náprstek J., Pospíšil S.: Aeroelastic instability of a system with nonconservative and gyroscopic forces	186
Novotný J., Novotný J. jun.: Modelling of a steam line whip and of a whip restraint by SYSTUS programme	188
Novotný L., Marek J.: Improvement of static features of machine tool frame	190
Omes J.: Model of hydraulic press with pulsating pressure source	191
Palzer O.: Mechatronic size control system in the bar and wire rod mill	193
Papuga J., Plešek J.: Numerical implementation of generalized non-linear kinematic hardening rule for elastic-plastic constitutive equation	194
Pásek M., Christé G., Šimurda J.: Computer modelling of effect of transversal tubules on excitation-contraction coupling in cardiac cells (basic study)	196
Pátek J., Klomfar J.: Prediction of the transport properties of multicomponent dense gas mixture	198
Pavelek M., Janotková E.: Heat transfer in the system of vertical plates	200
Pellant K., Mejzlik M., Přikryl K.: Waves of whispering gallery	202
Pešek L.: Identification of parameters of mechanical systems with dissipation layer	203
Pešlová F.: Comprehensive investigation of properties and behaviour of natural ceramics EUCOR	205
Peterka F.: Global view on dynamics of impact oscillator	207
Peterka F., Tondl A.: Dynamics of oscillator with piecwise linear model of soft impacts	209
Přštěk V.: Crank mechanism simulation – a module of the virtual engine	211
Pochanke A., Bodnicki M.: Modelling of measuring system for testing of stepping motors	213
Pochylý F., Malenovský E.: Stability analysis of the long journal bearings	215
Polach P.: Utilization of multibody simulations in creation of the construction design of the low-lewel deck articulated ŠKODA 22 Ab bus	217

Porteš P.: An analysis of vehicle handling by using computer model	219
Potěsil A., Hlaváček P.: Application of expert systems ANSYS and ADAMS in optimization of mechanisms with elastic members	221
Pražák J., Mocikat H., Göppert S., Herwig H.: Heat transfer efficiency of impinging jets	223
Procházka P.: Coupled modeling of geotechnical structures using DSC & TFA model	225
Převorovská S., Maršík F.: Numerical simulation of the cardiovascular hemodynamics during hemorrhaging	227
Přikryl K.: Analysis of bone conducted acoustic energy by the human crania	229
Püst L.: Dynamics of permanent magnetic bearing	231
Rohan E., Cimrman R.: Macroscopic approach to stress analysis of aortic aneurysm	233
Rusz S., Bořuta J., Lukáš R., Dostál P.: Orbital forming technology at the compacting of powder materials	235
Řídký R., Kotrbáček P.: Identification of carbon steel constitutive equations in the semi-solid state	237
Seitl S., Kněsl Z.: Quantitative assessment of the T-stress in short fatigue crack propagation	239
Schuster M., Razým V., Pašek R., Matas R.: Simulation of flow around control valve cone	241
Soldát J.: Compensation of thermal deformations of the machine tools	243
Steinhübl J., Záhorec O.: Analysis of random vibration of the two-wheel trailer	245
Stříž B.: Mechanical characteristics of pre-tension of textiles	246
Svoboda B.: Detection compacting of the soils under the floor the hall by method dynamic response	248
Svoboda J., Václavík M.: A influence of out-of-phase combined loading	250
Szykiedans K.: Fast stepper motor's single-step torque response	252
Škuderová A.: Simulation of impact's effects in nonlinear parametric systems	253
Šlichta J., Pásek M., Brožková K.: Analysis of restitution processes of cardiac cells on changes of gating parameters	255
Šolín P.: Modelling of orifice flow in complex thermodynamic cycle simulations	257
Španiel M., Valenta F., Růžička M., Řezníček M., Masák J., Novotný C.: Influence of surface corrosion defects on limit load carrying capacity of transmission gas pipelines	259
Štětina J., Ramík P.: Recent Automotive Gearbox Synchronization Analysis	261
Štol M., Musil J., Pražák J.: Substances for the complex modus lubrication in artificial joints	263
Švancara P., Beran V.: Computational modeling of high-frequency noise of vehicles using sea	265
Švígler J., Vimr J.: Incorrect contact of screw surfaces constituting a plane higher kinematic pair	267
Titurus B., Starek L.: Comparative study of the parametrization techniques in vibration based damage detection of welded test structure	269

Trnka J., Landa M.: Optical methods of generation and detection of ultrasound wave in thin-wall structures	271
Tůma J.: Vold-kalman order tracking filtering as a tool for machine diagnostics	273
Urbiš R., Kotoul M.: The influence of stress triaxiality in ductile ligaments of crack upon the fracture toughness	275
Uruba V., Mazur O., Jonáš P.: Intermittency analysis in a jet – cross-flow interaction	277
Válek M., Procházka P.: Kinking of fibers in composite aggregate	279
Valeš F., Pelikán V., Volek J., Červ J.: Non-stacionary stress state of transversally loaded thin and thick plates	281
Vítek K., Holý S., Štěrba P.: Material constant determination with FE-analysis support	283
Vlach R., Kotek V.: Analysis of behaviour ski for skiing along grass area	285
Vlasák P., Chára Z., Vatolík K., Pařenica J.: Application of hydraulically filled bags in flood protection	287
Volek J., Kočí K., Husák J.: Investigation of the influence of asymmetry in case of the vibration of a resiliently supported plate – application on the vibration of vehicle II.	289
Votrubec R., Šklíba J.: Identification of global characteristic of damper	291
Wierer M., Šejnoha J., Šejnoha M.: Evaluation of effective properties of woven composite tube	293
Zapoměl J.: Computational methods for analysis of behaviour of rotors supported by squeeze-film dampers and fluid-film bearings	295
Zeman V., Dupal J., Hlaváč Z., Kovář L., Voldřich J.: Vibration analysis of the car gear-box	297
Zemáňková J., Korouš J.: Micromechanical model of ductile fracture	299
Zemčík R., Červ J., Laš V.: Stress waves in thin strips with selected sorts of geometrical inhomogeneities	300
Zima P., Maršík F.: The effects of mass transfer in Rayleigh-Plesset bubble dynamics and cavitation modeling in a convergent-divergent nozzle	302
Zolotarev I.: Vibration of some part of a spherical shell in interaction with compressible filling	304
Zúñiga-González I., Maršík F.: Numerical simulation of wet air flow with phase transition	306
Žiaran S.: Methods of measurement of vibro-acoustic transfer properties of resilient elements	307

LIST OF POSTERS

Burša J., Vajdák M.: Stress-strain analysis of an overlapped connection of artery and vascular graft	311
Fuis V., Krbec M., Florian Z.: Computational modelling of the influence of area tolerance on the contact pressure between the hip joint endoprosthesis parts	313
Hloušek J., Mazánková M.: Process analysis of steam tank for vaporizing of wood bars	315
Jonáš P., Mazur O., Uruba V.: On the intermittent nature of the flow structure at by-pass transition of a flat plate boundary layer	317
Kavička F., Štětina J., Ramík P.: Optimization of concasting of steel using mathematical models	319
Konfršt J.: Simulations of the haemodynamics in the elastic model of vascular graft	321
Kratochvíl C., Kotek V.: Controlled drive systems (Analysis, Modelling and Research)	323
Leitermann D., Pražák J., Musil J.: Systemic resistance model effect on the cardiovascular system simulation	325
Leitermann D., Poušek L., Volhejn P.: Pulse wave velocity measuring - comparision study	327
Marvalová B., Loudová J.: Determination of the thermal conductivity of textile reinforced composites	329
Mazur O., Řehák V.: Small aerodynamic facility with variable gas density	331
Pečínka L., Krupa V.: Dynamic response of the thin cylindrical shell on the polyharmonic local loading	333
Pešek L., Horáček J., Hendrych P.: Frequency response functions modelling of the human skull with simulation of brain tissue influence	335
Potěsil A., Babuška M., Hlaváček P.: Application of expert systems ANSYS and ADAMS in optimisation of mechanisms with elastic members	337
Šolín P. : Mesh Generation tool XGEN based on an electromagnetic simulation	339