

Curriculum vitae

February 1, 2015

Family name: **Kolman**

First name: **Radek**

Title: Ing., Ph.D. (Dr.)

Date of birth: October 14, 1977

Nationality: Czech

Marital status: married (three children)

Affiliation: Institute of Thermomechanics, (IT ASCR)
Academy of Sciences of the Czech Republic, v.v.i.
Department D4 - Impact and Waves in Solids
Laboratory of Computational Solid Mechanics

Address: Dolejšková 1402/5
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Position: research scientist
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Education: 1992 - 1996 Secondary Technical School, Pelhřimov
Study program: Mechanical Engineering

1996 - 2002 **M.Sc. degree** at Faculty of Mechanical Engineering (FME),
Czech Technical University in Prague (CTU Prague)
Study program: Applied Mechanics
Title of Ms. thesis: Simulation of sheet metal forming process
and verification of PAM-STAMPTM Software

2002 - 2009 **PhD. degree** at Department of Mechanics, Biomechanics
and Mechatronics, Faculty of Mechanical Engineering (FME), Czech
Technical University in Prague (CTU Prague)
Study program: Mechanics of solids, deformable bodies and continua
Title of PhD. thesis: Dispersion properties of plane square serendipity
finite element in elastodynamics

**Career/
employment:** 7/2001 - study stay at the Škoda Auto (one month)
1/2003 - 10/2009 - IT ASCR (part-time, PhD. student position)
9/2004 - 8/2005 - Agrostroj Pelhřimov s.r.o. (part-time, designer, structural
engineering, sheet metal forming specialist)
9/2005 - 10/2009 - Agrostroj Pelhřimov s.r.o. (full-time, designer,
structural engineering, sheet metal forming specialist)
11/2009 -12/2011 - IT ASCR (full-time, post-doctoral position)
since 1/2012 - IT ASCR (full-time, research scientist position)

Teaching: FME CTU courses:
2002 - 2004 Strength of Materials I, II
2001 - 2003 Plasticity and creep (part Plasticity)

**Scientific
internships:** 10/2012 - 12/2012 - Ocean System Engineering (OSE), Korea Advanced
Institute of Science and Technology (KAIST), Daejeon, Korea
7/2013 - 8/2013 - OSE, KAIST, Daejeon, Korea
10/2013 - 11/2013 - OSE, KAIST, Daejeon, Korea

Awards: 2011 - the 2-nd place in the Prize of Prof. Ivo Babuška (awarded by the
Czech Society for Mechanics and by the Czech Society for Mathematics
and Physics) for the doctoral thesis

**Research:
activities:** continuum mechanics, finite element method, isogeometric analysis,
wave propagation, dispersion analysis, dynamics, vibration, static and
dynamics contact problems, impact problems of solids, fracture mecha-
nics, crack propagation, multi-scale modelling, numerical methods in
wave propagation-like problems, deformation processes in solids

Publications:	see the list of publications
H-index (WoS):	2
WoS citations:	19
Scopus citations:	23
WoS items:	5
Scopus items:	12
Invited lectures	<p>2015: Numerical solution of wave propagation problems in solids and dispersion analysis of finite element method and isogeometric analysis, In Current Problems in Numerical Analysis, Eds. M. Křížek, J. Šístek, T. Vejchodský, Mathematics Institute AS CR, v.v.i., Prague, January 9, 2015.</p> <p>2011: Isogeometric analysis and conference SIGA, In Seminar of Numerical Mathematics, Eds. M. Feistauer, I. Marek., Department of Numerical Mathematics, Charles University in Prague, Prague, May 12, 2011.</p>
Professional competences:	<p>Consultant of 1 Master student (title 'On the Mass Lumping in the Finite Element Method')</p> <p>Consultant of 1 Ph.D. student</p>
Chairman of conference organizing committee:	<p>Spliny and IsoGeometric Analysis SIGA 2011, IT ASCR, Prague, CR</p> <p>Spliny and IsoGeometric Analysis SIGA 2012, IT ASCR, Prague, CR</p> <p>EUROMECH Colloquium 540 - Advanced Modelling of Wave Propagation in Solids, IT ASCR, Prague, CR, October 1-3, 2012</p>
Chairman of conference nini-Minisymposia:	<p>ECNDT 2014, Prague, MS with A. Berezovski on "Wave propagation in solids and structures"(9 speakers)</p> <p>COMPDYN 2015, Crete, MS with J. Náprstek and K.C. Park on "Non-linear dynamics and wave propagation"(18 speakers)</p> <p>YIC ECCOMAS 2015, Aachen, MS with A. Tkachuk on "Advances in numerical methods for structural dynamics and wave propagation phenomena"(6 speakers)</p>
Reviewer of journals:	<p>Journal of Mechanical Engineering Science</p> <p>Engineering Mechanics</p>
Memberships:	<p>Central European Association for Computational Mechanics (CEACM)</p> <p>Czech Society for Mechanics</p>

Research projects : IAA2076904: Diagnostics of transient dynamic responses in plate and shell structures, AV0/IA, 1999-2003, member of team.
GACR 101/07/0588: Nondestructive analyses of defects in thin wall shells using acoustical wave propagation, GACR, 2007-2009, member of team.
GACR 101/07/1471: Finite element modelling of linear, non-linear and multi-scale effects in wave propagation in solids and heterogeneous media, GACR, 2007-2011, member of team.
ME10114: Numerical solution of impact/contact problems in non-linear finite element analysis, MSM/ME, 2010-2012, member of team.
GACR 101/09/1630: Numerical solution to steady-state and transient wave dispersion in mechanical systems on different scales, GACR, 2009-2013, member of team.
GAP101/11/0288: Design of intelligent composite structures, GACR, 2011-2014, member of team.
GAP101/12/2315: Modelling of acoustic wave propagation in strongly heterogeneous media; multi-scale numerical and analytical approaches, GACR, 2012-2016, member of team.
GPP101/10/P376: Study of dispersion properties of finite element method in elastic wave propagation problems, GACR, 2010-2012, post-doctorant project, applicant.
TH01010772: 2015-2017, TACR, member of team.
ETA-15-03: Advanced numerical modelling of dynamic processes in solids, Czech-estonian bilateral academic project, AV CR, 2015-2017, applicant with A. Berezovski (CENS, TUT Tallinn, Estonia),

Languages: English - advanced
German - beginner

Relevant skills: programming (Fortran, C++, Pascal)
FEM systems - ANSYS, MARC/MENTAT, PAM-STAMP, PMD
FE implementation - Tahoe (in C++), PMD (in Fortran 77)
CAD systems - Catia V.5 R.14, VisiCad V.13
other programmes: Matlab, Maple
clean driving licence

Interests: travelling, history, mathematics, physics

List of publications

Book chapters

J. Plešek, R. Kolman, D. Gabriel. Dispersion Error of Finite Element Discretizations in Elastodynamics. Eds. B.H.V Topping, J.M. Adam, F.J. Pallarés, R.Bru, M.L. Romero. *Computational Technology Reviews*, Volume **1**, pp. 251-279, 2010.

Journal papers

R. Kolman, S.S. Cho, K.C. Park. Partitioned shear and longitudinal wave equations for explicit wave propagation analysis. *International Journal for Numerical Methods in Engineering*, submitted, 2015. (IF=1.961).

R. Kolman, J. Plešek, J. Červ, M. Okrouhlík. Temporal-spatial dispersion and stability analysis of plane square biquadratic serendipity finite elements in explicit elastodynamics. *International Journal for Numerical Methods in Engineering*, submitted, 2014. (IF=1.961).

R. Cimrman, M. Novák, R. Kolman, M. Tůma, J. Vackář. Isogeometric analysis in electronic structure calculations. *Mathematics and Computers in Simulation*, submitted, 2014. (IF=0.856).

R. Kolman, S.V. Sorokin, B. Bastl, J. Kopačka, J. Plešek. Isogeometric analysis of free vibration of simple shaped elastic samples. *Journal of the Acoustical Society of America*, submitted, 2014. (IF=1.646).

R. Kolman, J. Plešek, M. Okrouhlík. Complex wavenumber Fourier analysis of the B-spline based finite element method, *Wave Motion* **51**(2), pp. 348–359, 2014. (IF=1.467)

R. Kolman, J. Plešek, M. Okrouhlík, D. Gabriel. Grid dispersion analysis of plane square biquadratic serendipity finite elements in transient elastodynamics. *International Journal for Numerical Methods in Engineering* **96**(1), pp. 1–28, 2013. (IF=2.056)

D. Gabriel, J. Plešek, R. Kolman, F. Valeš. Dispersion of elastic waves in the contact-impact problem of a long cylinder. *Journal of computational and Applied Mathematics*, **234**(6), pp. 1930–1936, 2010. (IF=1.030)

R. Kolman, J. Plešek, M. Landa. Finite Element Computational Technology for Composite Materials, *Materials Science Forum*, **482**, pp. 343-346, 2005. (IF=0.399)

J. Plešek, R. Kolman, M. Landa. Using Finite Element Method for the Determination of Elastic Moduli by Resonant Ultrasound Spectroscopy. *Journal of the Acoustical Society of America*, **116**(1), pp. 282-287, 2004. (IF=1.398)

Non-impact journal papers

R. Kolman, S.S. Cho, K.C. Park, K.C. On the diminishing of spurious oscillations in explicit finite element analysis of linear and non-linear wave propagation and contact problems. *The e-Journal of Nondestructive Testing*, **19**(4), pp. 1–7, 2014.

A. Berezovski, R. Kolman, J. Blažek, J. Kopačka, D. Gabriel, J. Plešek. Comparative study

of finite element method, isogeometric analysis, and finite volume method in elastic wave propagation of stress discontinuities. *The e-Journal of Nondestructive Testing*, **19**(4), pp. 1–8, 2014.

R. Kolman. Isogeometric free vibration of elastic block. *Engineering mechanics* **19**(4), pp. 279–291, 2012.

J. Trnka, R. Kolman, P. Dvořáková, E. Veselý. A study of stress Wave propagation in thin plate loaded by an oblique impact. *International Review of Mechanical Engineering*, **3**(3), pp. 322-331, 2009.

R Kolman, J. Plešek, D. Gabriel, M. Okrouhlík. Optimization of lumping schemes for plane square quadratic finite element in elastodynamics. *Applied and Computational Mechanics*, **1**(1), pp. 105-114, 2007.

R. Kolman, J. Trnka, J. Plešek. Numerical-experimental analysis of stress waves propagation in a steel plate under perpendicular impact loadings, *Engineering Mechanics*, **11**(6), pp. 1-13, 2004.

Conference papers and contributions (appr. 40)

A. Berezovski, R. Kolman, J. Blažek, J. Kopačka, D. Gabriel, J. Plešek. Comparative study of finite element method, isogeometric analysis, and finite volume method in elastic wave propagation of stress discontinuities. In the European Conference on Non-Destructive Testing (ECNDT), Prague, Czech Republic, 6-10 October, 2014. Brno: University of Technology, 2014. ISBN 978-80-214-5018-9.

R. Kolman, S.S. Cho, K.C. Park. Nearly non-spurious oscillations time scheme in finite element analysis of non-linear wave propagation and dynamic fracture mechanics. In the Third International Conference on Computational Modeling of Fracture and Failure of Materials and Structures (CFRAC 2013), Prague, Czech Republic, June 5-7, 2013.

R. Kolman, S.S. Cho, K.C. Park. An explicit time integration algorithm for finite element computations of discontinuous wave propagation problems. In the Colloquium Dynamics of Machines 2014, Prague, Czech Republic, February 4-5, 2014. Prague: Institute of Thermomechanics AS CR, v.v.i., 2014, Eds. L. Pešek, pp. 65-72 ISBN 978-80-87012-50-5.

R. Kolman, S.S. Cho, K.C. Park. Accurate explicit finite element method for wave propagation and dynamic contact problems. In the 11th World Congress on Computational Mechanics (WCCM XI), ECCM V and ECFD IV. Barcelona, Spain, July 20-25, 2014. Barcelona: International Center for Numerical Methods in Engineering, pp. 499-509, ISBN 978-84-942844-7-2.

R. Kolman, S.S. Cho, K.C. Park. On the diminishing of spurious oscillations in explicit finite element analysis of linear and non-linear wave propagation and contact problems. In the 11th European Conference on Non-Destructive Testing (ECNDT 2014), 6-10 October, 2014. Brno: University of Technology, 2014. ISBN 978-80-214-5018-9.

R. Kolman, S.S. Cho, J. Červ, K.C. Park. Component-wise partitioned finite element method in linear wave propagation problems: benchmark tests. In the Dynamics of machines and mechanical systems with interactions DYMAMESI 2014, Prague, Czech Republic, November 25-26, 2014. Prague : Institute of Thermomechanics AS CR, 2014, (Eds. I. Zolotarev, L. Pešek),

pp. 31-36, ISBN 978-80-87012-54-3.

R. Kolman, S.S. Cho, K.C. Park. An accurate explicit finite element method in elasto-plastic wave propagation problems. In the IUTAM Symposium on Complexity of Nonlinear Waves, Tallinn, Estonia, August 08-12, 2014. Tallinn: Institute of Cybernetics at Tallinn University of Technology, Eds. A. Salupere, G. Maugin), pp. 67-68. ISBN 978-9949-430-77-2.

R. Kolman, S.S. Cho, J. Červ, K.C. Park. Component-wise partitioned finite element method for wave propagation and dynamic contact problems. In the Computational Mechanics 2014, Hotel Horizont, Špičák, Czech Republic, November 03-05, 2014. Book of extended abstracts. Plzeň : University of West Bohemia, Eds. V. Adámek, pp. 55-56, ISBN 978-80-261-0429-2.

R. Kolman, S.V. Sorokin, B. Bastl, J. Kopačka, J. Plešek. Isogeometric analysis in free vibration problems. In the Computational Mechanics 2014, Hotel Horizont, Špičák, Czech Republic, November 03-05, 2014. Book of extended abstracts. Plzeň : University of West Bohemia, Eds. V. Adámek, pp. 57-58, ISBN 978-80-261-0429-2.

R. Kolman, S.S. Cho, K.C. Park. On an accurate explicit time integration algorithm for wave propagation problems in solids. In the Modelling 2014, Rožnov pod Radhoštěm, Czech Republic. Ostrava: Institute of Geonics AS CR, Eds. R. Blaheta, J. Starý, D. Sysalová, pp. 58-58, 2014, ISBN 978-80-86407-47-0.

D. Gabriel, J. Kopačka, J. Plešek, R. Kolman. Contact-impact treatment based on the bipenalty technique in explicit transient dynamics. In the 11th World Congress on Computational Mechanics (WCCM XI) and ECCM V and ECFD IV. In the 11th World Congress on Computational Mechanics (WCCM XI), ECCM V and ECFD IV. Barcelona, Spain, July 20-25, 2014.

J. Kopačka, D. Gabriel, J. Plešek, R. Kolman. Influence of mass lumping techniques on contact pressure oscillations in explicit finite element contact-impact algorithm based on isogeometric analysis with NURBS. In the Stability, Vibration, and Control of Machines and Structures 2014, Bělehrad, July 03-05, 2014. Mnichov: Springer, Eds. A. Guran, J. Gwinner, pp. 130-141, 2014, ISBN 978-80-8075-655-0.

J. Kopačka, D. Gabriel, R. Kolman, J. Plešek. Isogeometric contact analysis: a study of an explicit dynamic contact algorithm. In FEM Computations of Structures, Plzeň, Czech Republic, November 11, 2014. Plzeň: The University of West Bohemia in Plzeň, Eds. V. Laš, J. Krystek, pp. 30-35, 2014, ISBN 978-80-261-0445-2.

J. Kopačka, D. Gabriel, J. Plešek, R. Kolman. Influence of mass lumping techniques on contact pressure oscillations in explicit contact-impact algorithm based on isogeometric analysis. In the IUTAM Symposium on Complexity of Nonlinear Waves, Tallinn, Estonia, August 08-12, 2014. Tallinn: Institute of Cybernetics at Tallinn University of Technology, Eds. A. Salupere, G. Maugin), pp. 93-94. ISBN 978-9949-430-77-2.

J. Kopačka, D. Gabriel, R. Kolman, J. Plešek. Influence of mass lumping techniques on contact pressure oscillations in explicit finite element contact-impact algorithm based on isogeometric analysis with NURBS. In the Modelling 2014, Rožnov pod Radhoštěm, Czech Republic. Ostrava: Institute of Geonics AS CR, Eds. R. Blaheta, J. Starý, D. Sysalová), pp. 59-59, 2014, ISBN 978-80-86407-47-0.

R. Cimrman, M. Novák, R. Kolman, M. Tůma, J. Vackář. Isogeometric analysis in electronic structure calculations. In the Modelling 2014, Rožnov pod Radhoštěm, Czech Republic. Ostrava: Institute of Geonics AS CR, Eds. R. Blaheta, J. Starý, D. Sysalová), pp. 49-49, 2014, ISBN 978-80-86407-47-0.

R. Kolman, S.S. Cho, K.C. Park. Nearly non-spurious oscillations time scheme in finite element analysis of non-linear wave propagation and dynamic fracture mechanics. In the Third International Conference on Computational Modeling of Fracture and Failure of Materials and Structures (CFRAC 2013), Prague, Czech Republic, June 5-7, 2013.

R. Kolman, S.S. Cho, K.C. Park. Non-spurious oscillations time integration method in finite element analysis of non-linear wave propagation of stress Discontinuities. In the 4th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering COMPDYN 2013, Kos, Greece, June 12-14, 2013.

R. Kolman, J. Plešek, M. Okrouhlík, D. Gabriel, J. Kopačka. Verification of isogeometric analysis in elastic wave propagation of stress discontinuities. In the 4th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering COMPDYN 2013, Kos, Greece, June 12-14, 2013.

J. Kopačka, D. Gabriel, R. Kolman, J. Plešek, M. Ulbin. Studies in numerical stability of explicit contact-impact algorithm to the finite element solution of wave propagation problems. In the 4th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering COMPDYN 2013, Kos, Greece, June 12-14, 2013.

J. Plešek, J. Kopačka, D. Gabriel, R. Kolman. Contact-impact treatment in explicit transient dynamics using isogeometric analysis with nurbs. In the 4th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering COMPDYN 2013, Kos, Greece, June 12-14, 2013.

S.S. Cho, R. Kolman, K.C. Park. A method for computation of wave propagation in heterogeneous solids: implementation and performance. In the Proceedings of the ASME 2013 International Mechanical Engineering Congress & Exposition, IMECE2013, San Diego, USA, November 15-21, 2013.

R. Kolman Radek; S.S. Cho; K.C. Park. Explicit time integrations for finite element computations of wave propagation. Výpočty konstrukcí metodou konečných prvků 2010, Jednodenní seminář, in Czech, FME CTU, Prague, November 28, 2013.

D. Gabriel, J. Kopačka, R. Kolman, J. Plešek, M. Ulbin. Using the bipenalty technique in explicit contact-impact algorithm. In Computational Mechanics 2013. Plzeň : University of West Bohemia, November 4-6, 2013.

Kopačka Ján, Gabriel Dušan, Kolman Radek, Plešek Jiří. Convergence study of an explicit FE contact-impact algorithm based on isogeometric analysis with NURBS. In Computational Mechanics 2013. Plzeň : University of West Bohemia, November 4-6, 2013.

R. Kolman. Isogeometric free vibration of an elastic block. in Splines and IsoGeometric Analysis SIGA 2012. Institute of Thermomechanics ASCR, v.v.i, Prague, CD-ROM, pp. 1-3, 2012.

R. Kolman, J. Plešek, M. Okrouhlík, D. Gabriel. Numerical solution of elastic wave propagation problems by B-spline finite element method. In ECCOMAS YIC 2012, First ECCOMAS Young Investigators Conference, CD-ROM, Aveiro, Portugal, April 24–27, 2012. R. Kolman, J. Plešek, M. Okrouhlík. B-spline finite element method in one-dimensional elastic wave propagation problems. In Engineering Mechanics 2012, ITAM ASCR, v.v.i., Prague, pp. 657–663, 2012.

J. Kopačka, R. Kolman, D. Gabriel, J. Plešek. Frictionless contact of elastic bodies: comparison of treatment in finite element analysis and isogeometric analysis. In Engineering Mechanics 2012. ITAM AS CR, v.v.i., Prague, pp. 665–671, 2012.

J. Plešek, R. Kolman, D. Gabriel. Estimation of the critical time step for explicit integration. In Engineering Mechanics 2012. ITAM AS CR, v.v.i., Prague, pp. 248–249, 2012.

V. Sháněl, R. Kolman, J. Plešek. Mass lumping methods for the semi-loof shell element. In Engineering Mechanics 2012. ITAM AS CR, v.v.i., Prague, pp. 1161–1171, 2012.

R. Kolman, B. Bastl, J. Plešek, M. Okrouhlík. Isogeometric free vibration of elastic simple form bodies. In the Proceedings of the 6th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012), CD-ROM , Vienna University of Technology, Vienna, Austria, September 10-14, 2012.

M. Okrouhlík, R. Kolman. Validity of models and their verification. In the Proceedings of the 6th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012), CD-ROM , Vienna University of Technology, Vienna, Austria, September 10-14, 2012.

R. Kolman, J. Plešek, M. Okrouhlik, D. Gabriel, J. Kopačka. Numerical solution of elastic wave propagation by isogeometric analysis. In EUROMECH Colloquium 540 – Advanced Modelling of Wave Propagation in Solids, Institute of Thermomechanics, ASCR, v.v.i. Prague, Czech Republic, pp. 73-74, October 1-3, 2012.

J. Kopačka, R. Kolman, D. Gabriel, J. Plešek, Contact treatment in isogeometric analysis. In Computational mechanics 2012. Plzeň : University of West Bohemia, 2012.

R. Kolman, J. Plešek, M. Okrouhlík, D. Gabriel. Spatial dispersion and attenuation analysis of B-spline based finite element method in one-dimensional elastic wave propagation. In *USACM/ICES Thematic Conference IGA 2011, Isogeometric Analysis - Integrating Design and Analysis*, Eds. D. Benson, Y. Bazilevs, T. Hughes, The University of Texas at Austin, Austin, TX, January 13-15, 2011.

R. Kolman, J. Plešek, M. Okrouhlík, D. Gabriel. Dispersion Errors of B-spline based Finite Element Method in one-dimensional Elastic Wave Propagation. In *3rd ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering COMPDYN 2011*, Eds. M. Papadrakakis, M. Fragiadakis, V. Plevris, Corfu, Greece, May 25-28, 2011.

J. Plešek, R. Kolman, D. Gabriel. Studies in Numerical Stability and Critical Time Step Estimation by Wave Dispersion Analysis versus Eigenvalue Computation. In *3rd ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake En-*

gineering COMPDYN 2011, Eds. M. Papadrakakis, M. Fragiadakis, V. Plevris, Corfu, Greece, May 25-28, 2011. R. Kolman, J. Plešek, M. Okrouhlík, D. Gabriel. B-spline finite element response of elastic bar under shock loading. In *Conference HOFEIM 2011 Workshop on Higher Order Finite Element and Isogeometric Methods*, Eds. L. Demkowicz, Cracow, Poland, June 27-29, 2011.

R. Kolman, J. Plešek, M. Okrouhlík, D. Gabriel. On the spurious oscillations in B-spline finite element method. In *Proceedings of NSCM-24: the 24rd Nordic Seminar on Computational Mechanics*, Eds. J. Freund, R. Kouhia, Aalto University, Helsinki, November 3-4, 2011.

V. Sháněl, R. Kolman, J. Plešek. Mass lumping methods for the semi-loof shell element. In *Seventh International PhD & DLA Symposium 2011*, Pecs, Hungary, Komló: Rotari Press, Eds. IVANYI, P., 2011, pp. C128.

J. Červ, R. Kolman, T. Kroupa. Rayleigh-edge waves in thin orthotropic medium. 18th International Congress on Sound and Vibration - ICSV18. Rio de Janeiro : International Institute of Acoustics and Vibration, 2011 - (Musafir, R.), ISBN 978-85-63243-01-0, pp 1–8, 2011.

R. Kolman, J. Plešek, D. Gabriel. Accuracy of Finite Quadratic Serendipity Elements in Implicit Dynamic Wave Propagation Problems. In *ECCM - ECCOMAS 2010 IV European Conference on Computational Mechanics*, Paris, 2010.

R. Kolman, J. Plešek, M. Okrouhlík, D. Gabriel. Analysis of classical and spectral finite element spatial discretization in one-dimensional elastic wave propagation. In *Engineering Mechanics 2010*, Praha: Institute of Thermomechanics AS CR, v.v.i., 2010.

Kolman, Radek; Plešek, Jiří; Okrouhlík, Miloslav; Gabriel, Dušan. Dispersion properties of various finite element spatial discretizations in one-dimensional elastic wave propagation. In *26th conference with international participation COMPUTATIONAL MECHANICS 2010*, Hrad Nečtiny, Czech Republic, November 8 - 10, 2010.

R. Kolman, J. Kopačka; J. Plešek, M. Okrouhlík, D. Gabriel. Dispersion analysis of B-spline based finite element method for one-dimensional elastic wave propagation. In *Proceedings of NSCM-23: the 23rd Nordic Seminar on Computational Mechanics*, Eds. A. Eriksson, G. Tibert, Stockholm, pp. 255-258, 2010.

J. Plešek, R. Kolman, D. Gabriel. Accuracy and Stability of Finite Quadratic Serendipity Elements in Dynamic Wave Propagation Problems. In *COMPDYN 2009. ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*. Atény: National Technical University of Athens, 2009.

J. Plešek, R. Kolman, D. Gabriel. Numerical stability of Mass Lumping Schemes for Higher Order Finite Elements. In *International Conference on Complexity of Nonlinear Waves*. Tallin : Tallin University of Technology, 2009.

J. Plešek, R. Kolman, D. Gabriel. Optimization of lumping schemes for plane square quadratic finite element in elastodynamics. In *WCCM 8 - ECCOMAS 2008*, Venice. Eds. B.A. Schrefler, U. Perego, 2008.

J. Plešek, R. Kolman, D. Gabriel, F. Valeš. Application of dispersion analysis to the finite

element solution of wave propagation and impact problems. In *COMPDYN 2007. Athens : ECCOMAS*, 2007.