

Dr. Alexander K. Belyaev

List of publications in English and German

I. Books (Edited Volumes)

B1. A.K.Belyaev and A.Guran, eds. Selectic topics in structronics and mechatronic systems. World Scientific Publishers, 2003, 441 p.

B2. A.K.Belyaev, D.A.Indeitsev and H.Irschik, eds. Fourth European Conference on Structural Control, Proceedings. St. Petersburg, IPME, 2008, vol. 1&2, 885 p.

II. Translations of Books

T1. A.K.Belyaev, Translation of the book "Vibrations of elasto-plastic bodies" by V.A.Palmov from Russian into English, Springer-Verlag, Berlin-Heidelberg, 1998, 311p.

T2. A.K.Belyaev, Translation of the book "Nonlinear dynamics of active and passive systems of vibration protection" by M.Z.Kolovsky from Russian into English, Springer-Verlag, Berlin-Heidelberg, 1999, 426 p.

T3. A.K.Belyaev, Translation of the book "Analytical mechanics" by A.I. Lurie from Russian into English, Springer-Verlag, Berlin-Heidelberg, 2002, 864 p.

T4. A.K.Belyaev, Translation of the book "Dynamics of synchronising systems" by R.F. Nagaev from Russian into English, Springer-Verlag, Berlin-Heidelberg, 2002, 326p.

T5. A.K.Belyaev, Translation of the book "Dynamics of mechanical systems with Coulomb friction" by Le xuan Anh from Russian into English, Springer-Verlag, Berlin-Heidelberg, 2003, 284p.

T6. A.K.Belyaev, Translation of the book "Theory of elasticity" by A.I. Lurie from Russian into English, Springer-Verlag, Berlin-Heidelberg, 2005, 1050 p.

T7. Translation of the book "Nonlinear electromechanics" by D.Yu.Skubov and K.Sh.Khodzaev from Russian into English, Springer-Verlag, Berlin-Heidelberg, 2008, 410 p.

III. Chapters in Books

- C1. A.K.Belyaev, Combining continuous and discrete energy approaches to high frequency dynamics of structures. In: Selectic topics in structronics and mechatronic systems, A.K.Belyaev, A. Guran (eds). World Scientific Publishers, pp. 221-267, 2003.
- C2. A.K.Belyaev, Basics of continuum mechanics. In: Advanced Dynamics and Control of Structures and Machines, H.Irschik, K.Schlacher (eds) Springer, Wien New York, pp. 1-8, 2004.
- C3. A.K.Belyaev, Basics of analytical mechanics. In: Advanced Dynamics and Control of Structures and Machines, H.Irschik, K.Schlacher (eds) Springer, Wien New York, pp. 37-52, 2004.
- C4. A.K.Belyaev, High frequency dynamics of engineering structures. In: Advanced Dynamics and Control of Structures and Machines, H.Irschik, K.Schlacher (eds) Springer, Wien New York, pp. 77-96, 2004.

III. Papers in Journals

- J1. A.K.Belyaev, Propagation of plane waves in anisotropic medium having a complex structure. Soviet Applied Mechanics (USA), 1978, **14**, No. 5, pp 490-494.
- J2. A.K.Belyaev, Description of a one-dimensional vibrational state with a parabolic equation. Soviet Applied Mechanics (USA), 1985, **21**, No. 3. pp. 297-301.
- J3. A.K.Belyaev, On the integral description of broad-band vibration of complex structures. Zeitschrift für Angewandte Mathematik und Mechanik, 1990, **70**, No. 4. pp. 62-63.
- J4. A.K.Belyaev, On the application of the locality principle in structural dynamics. Acta Mechanica, 1990, **83**, pp. 213-222.
- J5. A.K.Belyaev, Vibrational state of complex mechanical structures under broad-band excitation. Int. Journal of Solids and Structures, 1991, **27**, No. 7, pp. 811-823.
- J6. A.K.Belyaev, Theory of vibrational conductivity, Zeitschrift für Angewandte Mathematik und Mechanik, 1991, **71**, No. 4, pp. 127-129.
- J7. A.K.Belyaev, Dynamical simulation of high-frequency vibration of extended complex structures. Int. Journal Mechanics of Structures and Machines, 1992, **20**, No. 2, pp 155-168.
- J8. A.K.Belyaev, High-frequency vibration of extended complex structures. Int. Journal of Probabilistic Engineering Mechanics, **8**, 15-24, 1993.

- J9. A.K.Belyaev and E.Brommundt, The influence of the motor and bit characteristics on the stability of drillstring rotation. Zeitschrift für Angewandte Mathematik und Mechanik, 1994, **74**, No. 4, pp. 53-55.
- J10. E.Brommundt und A.K.Belyaev, Berechnung selbsterregter Drehschwingungen von Bohrstraegen. Zeitschrift für Angewandte Mathematik und Mechanik, 1994, **74**, No. 4, pp.55-56.
- J11. A.K.Belyaev and N.J.Krutzik, Localization of high-frequency vibrations of secondary systems of power plants. Acta Mechanica, 1994, **102**, No. 1, pp. 1-10.
- J12. A.K.Belyaev, Vibrational conductivity approach to high-frequency dynamics. Int. J. Nuclear Engineering and Design, 1994, **150**, No 2-3, pp. 281-286.
- J13. A.K.Belyaev und H.Irschik, Zur kinetischen Instabilität von elektrodynamischen Schwingungserregern. Zeitschrift für Angewandte Mathematik und Mechanik, 1995, **75**, S1, pp. 79-80.
- J14. V.A.Palmov, E.Brommundt and A.K.Belyaev, Stability analysis of drillstring rotation. International Journal Dynamics and Stability of Systems, 1995, **10**, No. 2, pp. 99-110.
- J15. A.K.Belyaev and H.J.Pradlwarter, Wide-band random vibration in members of complex structures. International Journal of Solids and Structures, 1995, **32**, No. 24, pp. 3629-3641.
- J16. H.Irschik, A.K.Belyaev und K.Schlacher, Anwendung der Mohrschen Analogie auf "intelligente" Konstruktionen. Zeitschrift für Angewandte Mathematik und Mechanik, 1995, **75**, S1, pp. 81-82.
- J17. P.Fischer, A.K.Belyaev and H.J.Pradlwarter, Combined integral and FE analysis of broad-band random vibration in structural members. Probabilistic Engineering Mechanics, Vol. **10**, No.4, 1995, pp. 241-250.
- J18. A.K.Belyaev and V.A.Palmov, Thermodynamic derivation of heat conduction equation and dynamic boundary value problem for thermoelastic materials and fluids. Acta Mechanica, Vol. **114**, 1996, pp. 27-37.
- J19. A.K.Belyaev and H.Irschik, Non-linear waves in complex structures modelled by elastic-viscoplastic stochastic media. International Journal of Non-Linear Mechanics, vol. **31**, No. 5, pp. 771-777, 1996.
- J20. A.K.Belyaev und H.Irschik, Kinetische Instabilität elektrodynamischer Schwingungserreger. Elektrotechnik und Informationstechnik (e&i), **113** Jg. H. 7/8, S.489-494, 1996.

- J21. A.K.Belyaev and H.Irschik, On the dynamic instability of components in complex structures. *International Journal of Solids and Structures*, **34**, No 17. pp. 2199-2217, 1997.
- J22. A.K.Belyaev, Zur Instabilität des rotierenden Ölbohrstranges in einem gekrümmten Bohrloch. *Zeitschrift für Angewandte Mathematik und Mechanik*, 1997, **77**, S1, S. 31-32.
- J23. A.K.Belyaev and F.Ziegler, Homogenisation in dynamics of heterogeneous structures. *Zeitschrift für Angewandte Mathematik und Mechanik*, 1997, **77**, S2, S. 461-464.
- J24. H.J.Holl, A.K.Belyaev and A.Brandl, Ein Versuchsaufbau zum Studium von Strukturschwingungen mit nichtlinearen Rückstellkräften. *Österreichische Ingenieur- und Architekten-Zeitschrift (ÖIAZ)*, **142**, Heft 6, 450-453, 1997.
- J25. G.Hirrmann und A.K.Belyaev, Stabilitätsverhalten eines schnellaufenden Synchronriemens. *Antriebstechnik*, **36**, Nr. 6, S. 64-66, 1997.
- J26. R.Eglseer und A.K.Belyaev, Instabilitätsbereiche eines Kettentriebes. *Antriebstechnik*, **36**, No. 11, S. 61-63, 1997.
- J27. A.K.Belyaev. Comparative study of various approaches to stochastic elastic wave propagation. *Acta Mechanica* **125** No. 1-4, pp. 3-16, 1997.
- J28. A.K.Belyaev and F.Ziegler, Uniaxial waves in randomly heterogeneous elastic media. *Int. J. Probabilistic Engineering Mechanics*, **13**, No. 1, pp. 27-38, 1998.
- J29. A.K.Belyaev, Parametererregte Biegeschwingungen eines schnellaufenden Zahnriemens. *Zeitschrift für Angewandte Mathematik und Mechanik*, **78**, S1, S. 271-272, 1998.
- J30. A.K.Belyaev, One-dimensional stochastic elastic waves: a benchmark study. *Zeitschrift für Angewandte Mathematik und Mechanik*, **78**, S1, S. 267-270, 1998.
- J31. G. Pramhas und A.K. Belyaev, Instabilität einer rotierenden biegsamen Antriebswelle in einem gekrümmten Kanal. *Antriebstechnik*, **37**, Nr. 11, S. 74-76, 1998.
- J32. H. Irschik, M. Krommer, A.K. Belyaev, K. Schlacher, Shaping of piezoelectric sensors/actuators for vibrations of slender beams: coupled theory and inappropriate shape functions. *International Journal of Intelligent Material, Systems and Structures*, **9**, pp. 546-554, 1998.
- J33. H.J.Holl, A.K.Belyaev and H.Irschik, A numerical algorithm for nonlinear dynamic problems based on BEM. *Int. Journal Engineering Analysis with Boundary Elements*, **23**, pp. 503-513, 1999.

- J34. H.J.Holl, A.K.Belyaev and H.Irschik, Simulation of the Duffing oscillator with time-varying mass by a BEM in time. *Int. Journal Computer and Structures*, **73**, pp. 177-186, 1999.
- J35. A.K.Belyaev, Wave propagation in complex structures modelled by medium with internal variables. *Zeitschrift für Angewandte Mathematik und Mechanik*, **80**, S1, S. 101-104, 2000.
- J36. A.K. Belyaev, Thermodynamic derivation of dynamic boundary value problem and heat conduction equation for polarised thermoelastic materials. *Acta Mechanica*, **140**, No.1, pp. 119-129, 2000.
- J37. A.K.Belyaev, Energy transfer from low to high frequency modes due to repeated impacts. *Zeitschrift für Angewandte Mathematik und Mechanik*, **80**, S2, S. 271-272, 2000.
- J38. M.Baldinger, A.K.Belyaev and H.Irschik, Principal and second instability regions of shear deformable polygonal plates. *Int. Journal of Computer Modelling and Simulation in Engineering*, **26**, pp. 228-234, 2000.
- J39. A.K.Belyaev, Suppressing parametric resonance by a tuned vibration absorber. *Zeitschrift für Angewandte Mathematik und Mechanik*, **81**, S1, 2001.
- J40. M.Baldinger, H.Irschik and A.K.Belyaev, Parametric instability of polygonal Mindlin-Reissner plates subjected to harmonic in-plane forces. *Journal of Sound and Vibration*, **242**, No. 3, pp. 397-409, 2001.
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- J42. T. Mrazek, A.K.Belyaev, R. Reitbauer, H.Irschik, Versuchgestützte Modellierung von Kfz-Stoßdämpfern für die dynamische Mehrkörpersimulation (MKS). *Elektrotechnik und Informationstechnik*, Heft 9, S. 313-318, 2004.
- J43. B.A.Smolnikov, A.K.Belyaev, Evolutional dynamics and stability of dissipative solids. *Acta Mechanica*, **195**, No. 1-4, pp. 365-377, 2008.

IV. Papers in Proceedings and Books

P1. A.K.Belyaev and V.A.Palmov, Theory of vibroconductivity. Proceedings of the 1st Int. Conference on Recent Advances in Structural Dynamics, University of Southampton, England. Ed. M.Petyt, 1980, **1**, pp. 157-168.

P2. A.K.Belyaev and V.A.Palmov, Locality principle in structural dynamics. Proceedings of the 2nd Int. Conference on Recent Advances in Structural Dynamics, University of Southampton, England. Eds. M.Petyt and H.F.Wolfe, 1984, **1**, pp. 229-238.

P3. A.K.Belyaev and V.A.Palmov, Integral theories of random vibration of complex structures. In: Random Vibration - Status and Recent Developments, Eds I.Elishakoff and R.H.Lyon, Elsevier, Amsterdam, 1986, pp. 19-38.

P4. A.K.Belyaev, Rheological model of granular media in dynamics. In Wave Propagation in Granular Media, Eds D.Karamanlidis and R.B.Stout, ASME, New York, 1989, pp 102-108.

P5. A.K.Belyaev, Dynamical simulation of nuclear power plants for short duration loads. In: Transactions of 11th International Conference on Structural Mechanics in Reactor Technology, Tokyo, 1991, Vol. **B**, pp 101-104.

P6. A.K.Belyaev and F.Ziegler, Traffic-noise-excited uniaxial waves in complex structures. In: Trends in Application of Mathematics to Mechanics, Eds W.Schneider, H.Troger and F.Ziegler, Longman Scientific and Technical, ISIMM Series, UK, 1991, pp 108-117.

P7. A.K.Belyaev, Transition of high-frequency vibrations through non-anchored coupling of structural members. Transactions of 12th International Conference on Structural Mechanics in Reactor Technology, K. Kussmaul ed., Elsevier, 1993, Vol. **B**, pp. 67-72.

P8. A.K.Belyaev, Nonlinear high-frequency vibration of complex engineering structures. In: Nonlinearity and Chaos in Engineering Dynamics, eds. J.M.T. Thompson and S.R. Bishop. Wiley & Sons, 1994, pp. 285-294.

P9. A.K.Belyaev and H.J.Pradlwarter, Broad-band vibrations of driven components of complex structures. In: Structural Safety and Reliability, eds. G.I.Schunller, M. Shinozuka, J.T.P. Yao. A.A.Balkema, Rotterdam, 1994, pp. 85-91.

P10. A.K.Belyaev, Failure of vibration testing caused by dynamic buckling of shaker coil. In: Structural Dynamics: Recent Advances, eds. N.S. Fergusson, H.F.Wolfe and C. Mei. Institute of Sound and Vibration Research, University of Southampton, UK, 1994, **1**, pp. 224-233.

P11. H.Irschik, K.Schlacher and A.K.Belyaev, Eigenstrain analysis of smart beam-type structures. In: Mechatronics-The Basis for New Industrial Development, eds.

M.Acar, J.Makra and E.Penney. Computational Mechanics Publications, Southampton, 1994, pp.487-492.

P12. H.Irschik, A.K.Belyaev and K.Schlacher, Distributed control of structures using eigenstrain analysis. First World Conference on Structural Control, Proceedings, eds. G.W. Housner, S.F. Masri and A.G. Chassiakos, Int. Association for Structural Control, 1995, Vol.1, WP3 pp. 73- 82.

P13. A.K.Belyaev, Elastic-plastic wave propagation in engineering structures of power plants. Transactions of 13th International Conference on Structural Mechanics in Reactor Technology, Vol. 2, eds. M.M. Rocha and J.D. Riera, 1995, pp. 831-836.

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P15. H.J.Holl, A.K.Belyaev and A.Brandl, A versatile testing stand for teaching structural vibration with nonlinear restoring forces. In: Proceedings of the Twelfth Danubia-Adria Symposium on Experimental Methods in Solid Mechanics, 5. - 7. Okt. 1995, eds.: Borbas, Lajos; Sopron, 73-74, 1995.

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P18. H.J.Holl, A.K.Belyaev and H.Irschik, Simulation of the Duffing oscillator with time-varying mass by a BEM in time. In: Advances in Boundary Element Methods, ed. B.H.V.Topping, Civil-Comp Press, Edinburgh, pp. 113-120, 1996.

P19. A.K.Belyaev, Energy transfer to high-frequency modes due to repeated impacts. Proceedings of the 2nd European Nonlinear Oscillations Conference, eds. L.Pust and F.Peterka, Academy of Science of the Czech Republic, Prague, vol. 1, pp. 89-92, 1996.

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P23. A.K.Belyaev, E.Blumenschein, S.Blumenschein and J.Gerstmayr, Vibrational conductivity approach to vibration in a power plant subjected to aircraft impact. Transactions of the 14th International Conference on Structural Dynamics in Reactor Technology (SMiRT-14), Volume JSP/4, pp. 331-338, 1997.

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P25. M.Baldinger, A.K.Belyaev and H.Irschik, Instability regions of Mindlin-Reissner plates subjected to harmonic inplane forces. In: Structural Dynamics: Recent Advances, Proceedings the 6th International Conference, The Institute of Sound and Vibration Research, University of Southampton, UK, eds. N.S.Ferguson, H.F.Wolfe and C. Mei, Work-in-Progress-Volume, pp. 1-11, 1997.

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P28. H.J.Holl, A.K.Belyaev and H.Irschik, A BEM-formulation applied to the solution of nonlinear dynamic problems. Boundary Elements XX, Advances in Boundary Elements, Proceedings of the 20th World Conference on the Boundary Element Method, eds. A.Kassab, C.A.Brebbia and M.Chopra. Computational Mechanics Publications, Southampton, pp. 299-308, 1998.

P29. M.Baldinger, A.K.Belyaev and H.Irschik, Dynamic stability of parametrically excited plate vibrations using normal mode expansion. In: Proceedings of the 16th International Modal Analysis Conference, eds. A.L.Wicks and D.J.DeMichele, Society for Experimental Mechanics, vol. 2, pp. 1048-1053, 1998.

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P31. A.K.Belyaev, Dynamics of a buckled drillstring rotating in an arbitrary curved oil wellbore. IUTAM Symposium on New Applications of Nonlinear and Chaotic Dynamics in Mechanics, ed. F.C.Moon, Kluwer, Dordrecht, pp. 169-171, 1999.

P32. A.K. Belyaev, Modelling of the local dynamics of structural members by means of the vibrational conductivity approach. In: Structural Dynamics, Proceedings of the fourth European Conference on Structural Dynamics EURODYN'99, Eds. L. Fryba and J. Naprstek, Balkema, Rotterdam/Brokfield, pp. 139-144, 1999.

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P52. A.K. Belyaev, Muzaev A.A. Thermodynamic derivation of dynamic and state equations for polarized and thermoelastic materials. . In: Advanced Problems in Mechanics, Russian Academy of Science, ed. D.A. Indeitsev, St. Petersburg, pp. 21-27, 2007.

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