Bojan Guzina

Department of Civil, Environmental & Geo- Engineering
University of Minnesota, Twin Cities

bojanguzina.org

Education

1996 Ph.D., Civil Engineering, University of Colorado at Boulder

1992 M.S., Civil Engineering, University of Colorado at Boulder

1989 Dipl. Ing., Civil Engineering, University of Belgrade, Serbia

Research Interests

- Inverse scattering
- Waves in periodic and random media
- Nonlinear waves in tissue-like solids
- Applied inverse problems in NDE, geophysics, and medicine
- Mechanics and fracturing of thin films
- Geodynamics

Employment

09/08 –	*Endowed Shimizu Professor*, Department of Civil, Environmental & Geo- Engineering, University of Minnesota, Twin Cities
09/08 –	*Professor*, Department of Civil, Environmental & Geo- Engineering, University of Minnesota, Twin Cities
09/03 – 08/08	*Associate Professor*, Department of Civil Engineering, University of Minnesota, Twin Cities
01/98 – 08/03	*Assistant Professor*, Department of Civil Engineering, University of Minnesota, Twin Cities
02/96 – 12/97	*Research Associate and Instructor*, Department of Civil, Environmental and Architectural Engineering, University of Colorado, Boulder
01/91 – 01/96	*Research Assistant*, Department of Civil, Environmental and Architectural Engineering, University of Colorado, Boulder
06/89 – 07/90	*Design Engineer*, Energoprojekt Corporation, Belgrade, Serbia

Distinctions

2012	Lecturer, Workshop on Geometries, Shapes, and Topologies, Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach, Germany
2011–	Associate Editor, *Lecture Notes in Mechanics*, ASCE
2009	Visiting Scientist, École Polytechnique, Paris, France
2008	Lecturer, 2008 IUTAM-CISM Summer School on Advanced Integral Equation Methods in Computational Mechanics, Udine, Italy
2004–	Associate Editor, *Journal of Engineering Mechanics*, ASCE
2003	Visiting Scientist, École Polytechnique, Paris, France
2001–	Associate Fellow, University of Minnesota Supercomputing Institute
1999	CAREER Award, National Science Foundation
1999	Minnesota Young Civil Engineer of the Year, ASCE

Recent journal publications (over 60 since 1995)

- F. Cakoni, B.B. Guzina, and S. Moskow (2016). "On the homogenization of a scalar scattering problem for highly oscillating anisotropic media", *SIAM J. Math. Anal*, to appear.
- S.A. Lambert, S.P. Nasholm, D. Nordsletten, C. Michler, L. Juge, J-M. Serfaty, L. Bilston, B.B. Guzina, S. Holm, and R. Sinkus (2015). "Bridging three orders of magnitude: Multiply scattered waves sense fractal microscopic structures via dispersion", *Phys. Rev. Lett.*, **115**, 094301.
- B.B. Guzina and F. Pourahmadian (2015). "Why the high-frequency inverse scattering by topological sensitivity may work", *Proc. Roy. Soc. A*, **471**, 20150187 (29pp).
- F. Pourahmadian and B.B. Guzina (2015). "On the elastic-wave imaging and characterization of fractures with specific stiffness", *Int. J. Solids Struct.*, **71**, 126-140.
- A. Wautier and B.B. Guzina (2015). "On the second-order homogenization of wave motion in periodic media and the sound of a chessboard", *J. Mech. Phys. Solids*, **78**, 382-414.
- B.B. Guzina, E.V. Dontsov, M. Urban, and M. Fatemi (2015). "The 'sixth sense' of ultrasound: probing nonlinear elasticity with acoustic radiation force", *Phys. Med. Biol.*, **60**, 3775-3794.
- H. Yuan, B.B. Guzina, and R. Sinkus (2014). "Application of topological sensitivity toward tissue elasticity imaging using magnetic resonance data", *ASCE J. Eng. Mech.*, **140**, 443-453.
- R.D. Tokmashev, A. Tixier, and B.B. Guzina (2013). "Experimental validation of the topological sensitivity approach to elastic-wave imaging", *Inverse Problems*, **29**, 125005 (25pp).
- E.V. Dontsov, R.D. Tokmashev, and B.B. Guzina (2013). "A physical perspective of the length scales in gradient elasticity through the prism of wave dispersion", *Int. J. Solids Struct.*, **50**, 3674-3684.
- E.V. Dontsov and B.B. Guzina (2013). "Dual-time approach to the numerical simulation of modulated nonlinear ultrasound fields", *Acta Acoustica*, **99**, 777-791.
- C. Bellis, M. Bonnet and B.B. Guzina (2013). "Aposition of the topological sensitivity and linear sampling approaches to inverse scattering", *Wave Motion*, **50**, 891-908.
- E.V. Dontsov and B.B. Guzina (2013). "On the KZK-type equation for modulated ultrasound fields", *Wave Motion*, **50**, 763-775.
- H. Yuan, B.B. Guzina, S. Chen. R. Kinnick, and M. Fatemi (2013). "Application of topological sensitivity toward soft-tissue characterization from vibro-acoustography measurements", *ASME J. Comp. Nonlinear Dynamics*, **8**, 034503 (6 pp).
- C. Bellis, F. Cakoni, and B.B. Guzina (2013). "Nature of the transmission eigenvalue spectrum for elastic bodies", *IMA J. Appl. Math.*, **78**, 895-923.

Advising

PhD: 9 graduated, 3 ongoing; MS: 14 graduated

Sponsored research

Awarded projects total approximately $3.6M ($240k/yr) with BG as PI, and $1.1M ($73k/yr) as with BG co-PI over the last fifteen years (NSF, NIH, DOE, MnDOT, DOD, Shell). Over 70% of the funding with BG as PI is from federal sources.