

PhD openings in Geomechanics & Solid Mechanics

Bojan Guzina
Department of Civil, Environmental, and Geo- Engineering
University of Minnesota
www.bojanguzina.org



I am seeking talented doctoral students in the areas of **physics**, **applied mathematics**, and **engineering mechanics** applied to *direct and inverse problems* involving *wave motion*. Examples include inverse scattering, wave motion in architected and random media, geodynamics, and nonlinear waves in soft solids. We are tackling the problems using both analytical, computational, and experimental tools. Applications of our work include *seismic imaging relevant to mineral carbon storage*, *nondestructive evaluation* of materials and structures, *medical imaging* (tissue elastography), and *wave control by architected materials* (e.g. seismic metabarriers and topological insulators). Possible research areas, as described at bojanguzina.org/research, include:

Inverse scattering and visco-elastography

Nonlinear waves in soft solids

Waves in architected and random media

Applied inverse problems (mineral carbon storage & biomedical)

GEOMECHANICS PROGRAM

The graduate program in Geomechanics (my home program) at the University of Minnesota focuses on the applications of scientific principles to the study of complex natural and man-made materials, including rock, biological tissues, and architected solids. The program has six full-time faculty in geomechanics engineering, with several faculty in related fields. Graduate enrollment in the group includes approximately fifteen students, the majority of whom are in the PhD program. The Geomechanics group has a close collaboration with institutions such as Ecole Polytechnique, France, and CSIRO, Australia, which provides doctoral students with an opportunity for international travel and global research experience.

UNIVERSITY OF MINNESOTA

Founded in 1851, the University of Minnesota is one of the most comprehensive public universities in the United States and ranks [among the most prestigious universities in the world](#) offering outstanding support services to over 5,500 international students from 142 countries. It is both the state land-



grant university, and the state's primary research institution, with faculty of national and international reputation. The University's 2022 annual budget is approximately \$4 billion.

The University's main campus is centrally located in the [Twin Cities \(Minneapolis-St. Paul\) metropolitan area](#), with the population of over 2.5 million. The Twin Cities metro area, with numerous lakes and a superb network of public parks, is a bustling technological and cultural center, highlighted by the Forbes Magazine as [one of the most livable cities in the US](#), with non-stop flights to Amsterdam, London, Paris, and Tokyo. The University's Twin Cities campus is the second largest in the nation, with the enrollment of over 51,000 students.

OUR GRADUATES

The Geomechanics program at the University of Minnesota has graduated over 100 doctoral students. The PhD graduates and post-docs from our program have secured esteemed research positions in major multi-national companies (Shell, Exxon, Schlumberger), U.S. Government institutions (national labs), and academia (Georgia Institute of Technology, University of Colorado Boulder, University of Illinois Urbana-Champaign, University of Houston, Chinese Academy of Sciences, Dalhousie University among others.).

CONTACT

For inquiries, please contact me directly at guzin001@umn.edu or bojan7@gmail.com. Qualified applicants should hold a BS or MS degree in Applied Mathematics, Mechanics, Physics, Geophysics, or Engineering, the GPA of 8/10 or higher, and a solid knowledge of English. As applicable, applicants should submit their GRE and TOEFL scores. For application instructions, see <https://cse.umn.edu/cege/doctoral-programs>. The research fellowships are awarded on a competitive basis and include a full tuition coverage, health insurance, and a monthly stipend of over \$2k.