Postdoctoral Position on Modeling the Fracture Mechanics of Antarctic Ice Shelves

The Computational Mechanics and Physics Laboratory at Vanderbilt University is seeking a postdoctoral researcher interested in the area of ice sheet modeling and fracture mechanics. The specific research project is described below:

Fracture Mechanics of Antarctic Ice Shelves and Glaciers: This project aims to provide fundamental understanding of iceberg calving by advancing the frontiers in nonlinear continuum mechanics and computational fracture mechanics, and translating it to glaciology. The project aims to develop a fracture-physics based scheme to better represent iceberg calving in the community ice sheet model. The effort will also address research questions related to calving behavior of floating ice shelves and glaciers, and the role of hydrofracture and ice cliff failure in ice sheet mass loss in the future. The overarching goal is to enable more reliable prediction of calving fronts in whole-Antarctic ice-sheet simulations in the Community Ice Sheet Model (CISM) over decadal-to-millennial time scales. The project is funded through a 5-year CAREER grant from the National Science Foundation https://my.vanderbilt.edu/cpml/research/nsf-plr-1847173/

Qualifications: Applicants should have a Ph. D. degree in Civil/Mechanical/Computational Engineering, Engineering Mechanics, Applied Physics or Mathematics, Earth and Environmental Sciences, or a relevant field. The ideal candidate will have a background in nonlinear continuum mechanics, fracture mechanics and finite element methods. Essential requirements are strong quantitative, verbal and analytical skills, solid knowledge and experience in scientific programming (with Python or C/C++ or Fortran), expertise with either FEniCS or Elmer Ice software, and the ability to learn and employ new numerical methods and technologies from different disciplines. Previous research experience in the field of computational modeling and a record of publications in reputed international journals is required.

Timeline: The position is available immediately, but starting date is negotiable. Applications are accepted until the positions are filled. Initial appointment will be for 1 year, but funding is available to extend the appointment for another 1–2 years.

Applicants contact Prof. Ravindra Duddu ravindra.duddu@vanderbilt.edu with their CV.

Vanderbilt University, located in Nashville, Tennessee, is a leading research-intensive university in the United States in engineering, science and technology. Vanderbilt faculty and researchers are recognized for their pioneering research, scholarship, and leadership in higher education. The office of postdoctoral affairs provides excellent mentorship and opportunities for postdocs to further enhance their skills and prepare for future careers, including academic and industry jobs. https://gradschool.vanderbilt.edu/postdoctoral/about.php