Gabriele Albertini

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Education

2020-present Visiting researcher at Eidgenössische Technische Hochschule (ETH) Zürich, Switzerland
2018 Visiting researcher at Institut Jean le Rond d'Alembert, Sorbonne Université, Paris, France
2016-present Ph.D. in Structural Engineering, Cornell University, Ithaca, NY, USA
2016-2019 MSc in Structural Engineering, Cornell University, Ithaca, NY, USA
2014-2016 MSc in Civil Engineering, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland
2013-2014 Undergraduate Exchange Program in Civil Engineering, University of New South Wales (UNSW), Sydney, Australia
2011-2014 BSc in Civil Engineering, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland

Research Interests

Solid Mechanics, Fracture Mechanics, Friction, Mechanics and Physics of Earthquakes, Mechanical Metamaterials, Heterogeneous Media, Nonlinear Physics, Non-equilibrium Statistical Mechanics, Scientific Computing

Awards

2018 3rd Place for Oral Presentation. Tenth Annual Civil and Environmental Engineering Graduate Research Symposium. Cornell University.

2017 2nd Place for Oral Presentation. 9th Annual Civil and Environmental Engineering Graduate Research Symposium. Cornell University.

Publications

Published Papers

2020 Svetlizky, I., Albertini, G., Cohen, G., Kammer, D.S. and Fineberg, J. "Dynamic fields at the tip of sub-Rayleigh and supershear frictional rupture fronts", *Journal of the Mechanics and Physics of Solids* 137, 103826. https://doi.org/10.1016/j.jmps.2019.103826

2019 Ma, X., Hajarolasvadi, S., Albertini, G., Kammer, D.S., Elbanna, A.E., 2019. "A hybrid finite element-spectral boundary integral approach: Applications to dynamic rupture modeling in unbounded domains", *International Journal for Numerical and Analytical Methods in Geomechanics* 43, 1, 317-338. https://doi.org/10.1002/nag.2865

2017

Albertini, G., Kammer, D.S., 2017. "Off-fault heterogeneities promote supershear transition of dynamic mode II cracks", *J. Geophys. Res. Solid Earth* 122, 2017JB014301. https://doi.org/10.1002/2017JB014301

Submitted for Publication

Albertini, G., Lebihain, M., Hild, F. Ponson, L. and Kammer, D.S. "Effective toughness of periodic heterogeneous materials: the role of rate-dependent fracture energy", arXiv:2003.13805 [cond-mat.soft]

Albertini, G. Karrer, S., Grigoriu, M. D., Kammer, D. S. "Stochastic Properties of Static Friction"

Working Papers

Albertini, G., Elbanna, A. and Kammer, D.S. "A Three Dimensional Hybrid Finite Element-Spectral Boundary Integral Approach: Applications to Dynamic Earthquake Rupture Modeling in unbounded domains".

Albertini, G., Ke, C.Y. and Kammer, D.S. "A Novel Convolution Algorithm and Parallel Implementation for Spectral Boundary Integral Method for Solving the Elastodynamic Wave Equation in an Infinite Half-Space".

Presentations

Conferences and Workshops

2019 Mar Svetlizky, I., Albertini, G., Cohen, G., Kammer, D.S. and Fineberg, J. "Dynamic fields at the tip of sub-Rayleigh and supershear frictional rupture fronts", 11^{th} *Annual Civil and Environmental Engineering Graduate Research Symposium. Cornell University.*

2018 Aug Albertini, G. and Kammer, D.S., 2018. "Properties of Three Dimensional Supershear Mode II Ruptures", *Workshop: MEchanics and Physics of STrechable Objects (MEPHiSTO), Cargese, France.*

2018 Jun Albertini, G. and Kammer, D.S., 2018. "Properties of Three Dimensional Supershear Mode II Ruptures", *18th U.S. National Congress for Theoretical and Applied Mechanics (USNCTAM).*

2018 Mar Albertini, G. and Kammer, D.S., 2018. "Properties of Three Dimensional Supershear Mode II Ruptures", *Tenth Annual Civil and Environmental Engineering Graduate Research Symposium. Cornell University.*

2017 Jul Albertini, G. and Kammer, D.S., 2017. "Propagation Speed Instability in Rapid Mode II Fracture in Heterogeneous Media", *Society of Engineering Science (SES)* 54^{th} *Annual Technical Meeting.*

2017 Mar Albertini, G. and Kammer, D.S., 2017. "Dynamic shear crack propagation along frictional interfaces in heterogeneous elastic media, effects on supershear transition", 9^{th} *Annual Civil and Environmental Engineering Graduate Research Symposium. Cornell University.*

2016 Oct Albertini, G. and Kammer, D.S., 2016. "Supershear transition of dynamic mode II fracture in heterogeneous elastic media", *Society of Engineering Science (SES)* 53^{rd} *Annual Technical Meeting.*

Teaching

2020 Teaching assistant at Cornell University: Introduction to the Behavior of Steel Structures (CEE 4740).
2018-2019 Teaching assistant at Cornell University: Differential Equations for Engineers (MATH 2930).
2015 Teaching assistant at EPFL: Geothechincs and Rock Mechanics.

2012-2013 Teaching assistant at EPFL: Mathematics and Geometry.

Industry Experience

2015 Engineer Intern at AF-Consult Switzerland AG. Project: Nant de Drance Pumped Storage Power Plant. Local site management.

2014 Engineer Intern at Repower AG. Project: Renovation of Silvaplana Hydro Power Plant. Feasibility Study.

Languages

Italian, English, French & German

Technical Skills

Programming

Python, Matlab, C, C++, High Performance Computing, MPI, OpenMP

Numerical Modeling Methods

Finite Element Method, Spectral Boundary Integral Method, Cohesive Element Model for Fracture

Experimental Methods

Experimental Fracture Mechanics, Integrated Digital Image Correlation, Signal Processing

Last updated: May 7, 2020