Idini, Benjamin – CV

Planetary Geophysicist
California Institute of Technology
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Research interests

Planetary interiors and evolution; Ocean Worlds; tidal interactions; gravity radio science; solar system exploration; seismology of rocky and gas giant planets; earthquake mechanics; tectonic deformation via remote sensing.

Education

California Institute of Technology

Ph.D. Planetary Science — 2022 (expected)
Advisor: David J. Stevenson

M.S. Geophysics — 2019

Universidad de Chile

M.S.E. Earthquake Engineering — 2016
Thesis: Curvas de atenuación para terremotos intraplaca e interplaca en la zona de subducción chilena
Advisors: Fabián Rojas and Sergio Ruiz

Diploma in Civil Engineering — 2016

B.S.E. Civil Engineering — 2013

Research

NASA's Juno mission, Interiors Working Group — 2020–present
Developed models and theory to interpret radio science observations of Jupiter's tidal response.

Graduate research associate, California Institute of Technology — 2017–present
Projects: (1) Modeling of Jupiter's core; (2) fault zone damage and earthquake rupture mechanics; (3) earthquake modeling from spaceborne radar.

Marcus G. Langseth research vessel, Puysegur Trench, New Zealand — Mar 2018
Assisted the deployment of instrumentation and data acquisition in the South Island Subduction Initiation Experiment (SISIE).

Research associate, Programa de Riesgo Sísmico, Universidad de Chile — 2017
Analyzed variations in the high-frequency earthquake spectra along the subducting Nazca plate in Northern Chile.

Student intern, Centro Sismológico Nacional, Chile — Feb 2013
Compiled a historical data base of seismic data recorded by the CSN network in Chile.

Student intern, S&S Ingenieros Consultores Ltda. — Feb 2012
Performed revisions of the structural analysis of projects in mining and housing.

Undergraduate research assistant, Structural Dynamics Laboratory, Universidad de Chile — Jun–Oct 2011
Installed strain gauges in built-up T-stubs (Double T moment connections) submitted to cyclic loading.

Publications

(11) **Idini, B.**, Ruiz, S., Ampuero J-.P., Leyton, F., & Rivera, E. (in prep.). High-frequency strong ground motion along the plate boundary in Northern Chile .

(10) **Idini, B.** & Stevenson D.J. (in rev). The gravitational imprint of an interior–orbital resonance in

Jupiter–Io.
(9) **Idini, B.** & Stevenson D.J. (2021). The lost meaning of Jupiter's high–degree Love numbers. The Planetary Science Journal, arxiv.org/abs/2112.05901.
(8) **Idini, B.** & Stevenson D.J. (2021). Dynamical tides in Jupiter as revealed by Juno. The Planetary Science Journal, 2(2), 69.
(7) **Idini, B.** & Ampuero J-.P. (2020). Fault-zone damage promotes pulse-like rupture and back-propagating fronts via quasi-static effects. Geophysical Research Letters, 47(23), e2020GL090736.
(6)Erickson, B., et al., including **Idini, B.** (2020). The community code verification exercise for simulating sequences of earthquakes and aseismic slip (SEAS). Seismological Research Letters, 91(2A), 874-890.
(5) Ross, Z., **Idini, B.**, et al. (2019). Hierarchical interlocked orthogonal faulting in the 2019 Ridgecrest earthquake sequence. Science, 366, 6463.
(4) Gurnis, M., et al., including **Idini, B.** (2019). Incipient subduction at the contact with stretched continental crust: The Puysegur Trench. Earth and Planetary Science Letters, 520, 212-219.
(3) Leyton, F., Pastén, C., Ruiz, S., **Idini, B.**, & Rojas, F. (2018). Empirical site classification of CSN network using strong-motion records. Seismological Research Letters, 89(2A), 512-518.
(2) Luo, Y., Ampuero, J. P., Galvez, P., Van den Ende, M., & **Idini, B.** (2017). QDYN: a Quasi-DYNamic earthquake simulator (vr. 1). Zenodo.(doi: 10.5281/zenodo. 322459).
(1) **Idini, B.,** Rojas, F., Ruiz, S., & Pastén C. (2017). Ground motion prediction equations for the Chilean subduction zone, Bulletin of Earthquake Engineering, 15, 5.

Outreach and service

Mentor for Caltech's GPS Student Buddy Program	2021
Speaker at Caltech's Science Journeys	2021
Judge for Caltech's SFP Summer Vodopia-Hasson poster competition	2021
Speaker at the Urban Math Collaborative program, Long Beach Unified School District	2021
Host in *Astronomía en el Bar* (Astronomy on tap hosted in Spanish), Los Angeles	2021
Mentor for Caltech's GSC International Student Buddy Program	2020
Judge for Caltech's Summer Undergraduate Research Fellow (SURF) poster competition	2020
Caltech Science for March, Seismological Laboratory booth	2018
Universidad de Chile Student Federation (FECH), board of directors	2014
Universidad de Chile Engineering Student Council (CEI), board of directors	2013

Referee for Bull. Earthq. Eng.

Honors and awards

Keck Institute for Space Studies Affiliate	2019–present
Caltech Division of Geological and Planetary Sciences Fellowship	2017
Distinguished Major with Highest Distinction, Universidad de Chile	2016
CONICYT Master of Science Fellowship, Chile	2014–2015
Honored Undergraduate Student, Universidad de Chile	2011–2012

Selected talks

Tides in Jupiter, Report #3, Interiors Working Group, NASA's Juno mission, 2021.
Journey to the center of Jupiter, Science Journeys, Caltech, 2021.
The tidal excitation of Jupiter's dilute core, Planetary Science Seminar, Caltech, 2021.
Dynamical tides in the Jovian System as revealed by Juno, Planetary Science Seminar, Caltech, 2020.

Tides in Jupiter, Reports #1 & #2, Interiors Working Group, NASA's Juno mission, 2020.
Simple Estimates for the dynamical contribution to tidal gravity, Interiors Working Group, NASA's Juno mission, 2020.
A Bayesian Image of the 2017 Kermanshah Seismic Sequence in the Northwestern Zagros, AGU Fall Meeting, Washington DC, 2018.
Empirical dynamic amplification factors for sites based on seismic noise, 16th World Conference on Earthquake Engineering, Santiago, Chile, 2017.

Selected posters

Dynamical tides in the Jovian System as revealed by Juno, AGU Fall Meeting, 2020.
The first few days of the 2019 Ridgecrest earthquake sequence, SCEC Annual Meeting, 2019.
Rupture complexity promoted by damaged fault zones, AGU Fall Meeting, New Orleans, 2017
Ground motion prediction equations for the Chilean subduction zone, 2nd Geophysical Signatures of Earthquakes and Volcanoes - 2GSEV, Santiago, Chile, 2016.

Teaching assistant

California Institute of Technology

Planetary Structure and Evolution	2021
Geodynamics	2020
Freshman Seminar: Earthquakes	2019

Universidad de Chile

Advanced Structural Dynamics	2015
Seismic Design of Structures	2015