

Boris Rösler

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Appointments

2023 - currently:

Assistant Professor at the Ensenada Center for Scientific Research and Higher Education (CICESE)

- Network Operator of the strong motion seismic network RANOM

Education

2023:

Postdoctoral Fellow of the Japanese Society for the Promotion of Science (JSPS) at the Earthquake Research Institute (ERI) of the University of Tokyo

- **Advisor:** Hitoshi Kawakatsu
- **Research Project:** Influence of Faulting Type on Polarities of Non-Double-Couple Components in Seismic Moment Tensors

2016 - 2022:

Graduate student at Northwestern University, Ph.D. in Geologic Sciences

awarded both the Graduate Student Teaching Award (2020) and the Graduate Student Research Award (2022)

- **Advisor:** Seth Stein
- **Doctoral Thesis (2022):** Using Global Moment Tensor Catalogs to Study Earthquake Source Processes
- **Master's Thesis (2018):** Origin of Surface-Wave Amplitude Anomalies
- **Further Research Project:** Surface-Wave Radiation Patterns

2017 - 2019:

Certificate in Integrated Data Science at Northwestern University

2012 - 2016:

Undergraduate student at the University of Colima (Mexico), Bachelor of Physics

Graduation with Honors for Thesis Defense (2016), Outstanding Academic Achievement Award (2016), Peña Colorada Award for the best student of the graduating class (2016), Scholarship of Excellence for the best student in each semester (2012-2016), first foreign student to successfully complete a bachelor degree at the Faculty of Science (2016)

- **Grade Average:** 9.59/10
- **Bachelor's Thesis:** About the Detection of Stealth Scalar Fields
- **Research Projects:** Calculation of high-order eigenvalues for the Helmholtz equation, Perturbations of space-time in linearized gravity

Publications

10. **Boris Rösler:** Influence of Earthquake Faulting Type on Polarity of Non-Double-Couple Components (in review)
9. **Boris Rösler, Bruce D. Spencer & Seth Stein (2024):** Which Global Moment Tensor Catalog Provides the Most Precise Non-Double-Couple Components?, *Seismological Research Letters*, [Link](#)
8. **Boris Rösler, Seth Stein, Adam T. Ringler & Jiří Vackář (2024):** Apparent Non-Double-Couple Components as Artifacts of Moment Tensor Inversion, *Seismica*, 3 (1), [Link](#)
7. **Boris Rösler, Seth Stein & Bruce D. Spencer:** When are Non-Double-Couple Components of Seismic Moment Tensors Reliable?, *Seismica*, 2 (1), 241, [Link](#)
6. **Boris Rösler, Seth Stein & Susan E. Hough (2022):** On the Documentation, Independence, and Stability of Widely Used Seismological Data Products, *Frontiers in Earth Science*, 10, 988098, [Link](#)
5. **Boris Rösler & Seth Stein (2022):** Consistency of Non-Double-Couple Components of Seismic Moment Tensors With Earthquake Magnitude and Mechanism, *Seismological Research Letters*, 93 (3), 1510–1523, [Link](#)
4. Roberto Cabièces, Andrés Olivares-Castaño, Thiago C. Junqueira, Jesús Relinque, Luis Fernandez-Prieto, Jiří Vackář, **Boris Rösler**, Jaime Barco, Antonio Pazos, & Luz García-Martínez (2022): Integrated Seismic Program (ISP): A new Python GUI-based software for earthquake seismology and seismic signal processing, *Seismological Research Letters*, 93 (3), 1895–1908, [Link](#)
3. **Boris Rösler, Seth Stein & Bruce D. Spencer (2021):** Uncertainties in Seismic Moment Tensors Inferred from Differences Between Global Catalogs, *Seismological Research Letters*, 92 (6), 3698–3711, [Link](#)

2. Vivian Tang, **Boris Rösler**, Jordan Nelson, JaCoya Thompson, Suzan van der Lee, Kevin Chao, & Michelle Paulsen (2020): Citizen Scientists Help Detect and Classify Dynamically Triggered Seismic Activity in Alaska, *Frontiers in Earth Science*, 8, 321, [Link](#)
1. **Boris Rösler** & Suzan van der Lee (2020): Using Seismic Source Parameters to Model Frequency-Dependent Surface-Wave Radiation Patterns, *Seismological Research Letters*, 91 (2A), 992–1002, [Link](#)

Reviews

- **Seismological Research Letters** (2024)
- **Seismological Research Letters** (2023)
- **Results in Geophysical Sciences** (2022)
- **Nature** (2022, original and revised manuscript)
- **Geophysical Journal International** (2022, original and revised manuscript)
- **GSA Books** (2021)
- **GSA Books** (2020)

Fellowships and Scholarships

2023 - 2024:

- Postdoctoral Fellowship of the Japan Society for the Promotion of Science (JSPS)

2018 - 2019:

- IDEAS Fellowship at Northwestern University

2017 - 2018:

- IDEAS Fellowship at Northwestern University

2016 - 2017:

- Fellowship of The Graduate School at Northwestern University

2012 - 2016:

- "Beca de Excelencia", Scholarship of the University of Colima for the best student in all eight semesters

Awards

2024:

- SSA International Travel Grant

2022:

- Graduate Student Research Award at Northwestern University

2020:

- Graduate Student Teaching Award at Northwestern University
- Integrated Data Science Certificate at Northwestern University

2016:

- Peña Colorado Prize for the best student of the graduating class at the University of Colima
- Graduation with Honors for Thesis Defense at the University of Colima
- Outstanding Academic Achievement Award at the University of Colima

2012-2016:

- "Beca de Excelencia" (1st - 8th semester), Scholarship of the University of Colima for the best student in all eight semesters

Conference Presentations

2024:

- **Boris Rösler**, Seth Stein, Bruce D. Spencer, Adam T. Ringler, Jiří Vackář: Uncertainty Estimates for Moment Tensors and Quantities Derived From Them From Comparison of Global Catalogs (SSA Annual Meeting, **Talk**, [Link](#))

2023:

- **Boris Rösler**, Insight into Earthquake Source Processes from Moment Tensor Catalogs (UGM Annual Meeting, **Talk**, [Link](#))
- **Boris Rösler**, Uncertainty Estimates for Moment Tensors and Quantities derived from them from Comparison of Global Catalogs (AGU Fall Meeting, **Poster**, [Link](#))

2022:

- **Boris Rösler** & Seth Stein, Are most earthquakes' non-double-couple components artifacts? (SSA Annual Meeting, **Talk**, [Link](#))
- **Boris Rösler** & Seth Stein, Insight into Earthquake Source Processes from Large Moment Tensor Catalogs (SAGE/GAGE Community Workshop, **Poster**, [Link](#))
- **Boris Rösler** & Seth Stein, Insight into Earthquake Source Processes from Large Moment Tensor Catalogs (AGU Fall Meeting, **Poster Talk**, [Link](#))

2021:

- **Boris Rösler** & Seth Stein, Uncertainties in Seismic Moment Tensors Inferred from Differences Between Global Catalogs (SSA Annual Meeting, **Talk**, [Link](#))
- **Boris Rösler** & Seth Stein, Analysis of Differences in Seismic Moment Tensors between Global Catalogs (EGU General Assembly, **Talk**, [Link](#))
- James Neely, **Boris Rösler**, Seth Stein & Bruce Spencer, Insight into Earthquake Stress Drops and Moment Tensors from Large Global Datasets (SAGE/GAGE Community Workshop, **Poster**)
- **Boris Rösler** & Seth Stein, Insight into Earthquake Source Processes from Large Global Datasets (AGU Fall Meeting, **Poster**, [Link](#))

2020:

- Vivian Tang, **Boris Rösler** and Suzan van der Lee, Dynamically Triggered Seismic Activity in Alaska (AGU Fall Meeting, **Talk**, [Link](#))

2019:

- **Boris Rösler**, Suzan van der Lee, Frank Elavsky & Manochehr Bahavar, New IRIS Data Product: Dynamic Surface-Wave Radiation Patterns (SSA Annual Meeting, **Talk**, [Link](#))
- **Boris Rösler**, Suzan van der Lee and Kevin Chao, Influences on Surface-Wave Induced Dynamic Stresses on Arbitrary Faults in a Layered Earth (AGU Fall Meeting, **Talk**, [Link](#))
- Vivian Tang, **Boris Rösler**, Jordan Nelson, JaCoya Thompson, Alice Lucas, Kevin Chao, Zhigang Peng, Michelle Paulsen, Laura Trouille & Suzan van der Lee, 5000 Ears and Eyes Detect and Classify Triggered Seismic Events in Alaska (AGU Fall Meeting, **Poster**, [Link](#))

2018:

- **Boris Rösler**, Suzan van der Lee & Kevin Chao, Surface-Wave Induced Dynamic Stresses on Arbitrary Faults in a Layered Earth (AGU Fall Meeting, **Talk**, [Link](#))
- Vivian Tang, **Boris Rösler**, Jordan Nelson, JaCoya Thompson, Alice Lucas, Kevin Chao, Zhigang Peng, Michelle Paulsen, Laura Trouille & Suzan van der Lee, Earthquake

Detective: Engaging Citizens in the Detection of Dynamically Triggered Seismic Events
(AGU Fall Meeting, [Poster](#), [Link](#))

Invited Talks

2023:

- Ocean Hemisphere Research Center of the Earthquake Research Institute at the University of Tokyo: Insight into Earthquake Source Processes from Global Moment Tensor Catalogs

2022:

- Geodesy and Geophysics Seminar of the Upper Midwest: Insight into Earthquake Source Processes from Global Moment Tensor Catalogs
- Seismology and Mathematical Geophysics Group at Australian National University (ANU): Insight into Earthquake Source Processes from Global Moment Tensor Catalogs
- Earth Sciences Division at the Ensenada Center for Scientific Research and Higher Education (CICESE): Studying Earthquake Source Processes with Global and Regional Moment Tensor Catalogs

Research Experience

2018:

- IRIS Data Management Center: Development of the Surface-Wave Radiation Pattern Product

2000:

- Volcano Observatory of the University of Colima: Using the Dominant Frequency of Volcanic Tremor to Forecast Eruptions

1999:

- TRANSALP Project: Deployment of Seismic Stations and Data Analysis during a Seismic Reflection and Refraction Project

Teaching

2022:

- Earth's Interior (Teaching Assistant, 200-level)
- Plate Tectonics (Teaching Assistant, 300-level)
- Physics of the Earth (Teaching Assistant, 300-level for ISP students)

2021:

- Geological Impacts on Civilization (Teaching Assistant, 100-level)
- Physics of the Earth (Teaching Assistant, 300-level for ISP students)

2020:

- Petrology - Evolution of Crust and Mantle Rocks (Teaching Assistant, 300-level)
- Physics of the Earth (Teaching Assistant, 300-level for ISP students)

2019:

- Inverse Methods (Grader, 300-level)
- Physics of the Earth (Teaching Assistant, 300-level for ISP students)

Outreach

2018 - 2020:

- Co-Manager and Developer of "Earthquake Detective":
Citizen science project that combines machine learning and citizen science to efficiently classify local seismic events through sonified seismograms

2017 - 2018:

- Creator and Developer of the Surface-Wave Radiation Pattern Product:
Data product on the IRIS website to display the radiation pattern of Rayleigh and Love waves based on arbitrary source mechanism

Professional Society Memberships

since 2023:

- Mexican Geophysical Union (UGM)

since 2019:

- Seismological Society of America (SSA)

since 2018:

- American Geophysical Union (AGU)

Other Work Experience

Exploration of more than 250 different mining concessions in 12 different states of Mexico, exploitation of four different mines in the states of Colima and Jalisco

2008 - 2012:

Founder, Partner and Chief Executive Officer at East Pacific Mining Company S.A. de C.V. and Proyectos Pacíficos S.A. de C.V. in Colima (Mexico)

- Geological, geophysical and mineralogical Exploration of Mineral Deposits
- Development of Mining Plans
- Exploitation of Mineral Deposits
- Resolution of Legal Issues
- Consulting in Mining

2011-2012:

Director of Mining at CC Mining S. de R.L. de C.V.

- Development of Business Strategies
- Initialization of Collaborations
- Exploration and Exploitation of Claims

2008:

Chief Geologist at TMT Global Corp. S.A. de C.V.

- Exploration of Mineral Deposits (Geological Field Studies)
- Development of Exploitation Strategies

2000 - 2007:

Founder, Partner and Chief Executive Officer at Electric Nation GbR and Save the Rave GbR in Berlin and Munich (Germany), independent music production companies

- Publication and Promotion of Albums
- Event Organization

Language Skills

- fluent in English, Spanish, and German (native language)
- basic conversation skills in French