

HARSHA S. BHAT

Director of Research at CNRS
Teaching Prof. Ecole Polytechnique
Laboratoire de Géologie
24 Rue Lhomond
75005, Paris, France
<https://harshasbhat.github.io>



EDUCATION

Institution	Degree	Field	Year
École Normale Supérieure, France	H.D.R.†	Supershear Earthquakes	2021/01
Harvard University, USA	Ph.D.*	Mechanical Sciences	2007/06
Harvard University, USA	M.S.	Engineering Sciences	2002/06
NITK, India	B.E.	Civil Engineering	2001/06

† Habilitation à Diriger des Recherches — * Supervised by Prof. J. R. Rice & Dr. R. Dmowska

CURRENT POSITION

Institution	Period	Role
École Normale Supérieure, France	2024/10 ▶ Present	CNRS Director of Research
École Polytechnique, France	2022/09 ▶ Present	Teaching Professor (PCC)

PAST POSITIONS

Institution	Period	Role
École Normale Supérieure, France	2016/05 ▶ 2024/09	CNRS Research Scientist
NISER, India	2021/11 ▶ 2023/11	Visiting Professor
Institut de Physique du Globe de Paris, France	2012/01 ▶ 2016/05	CNRS Research Scientist
University of Southern California, USA	2010/03 ▶ 2011/12	Asst. Professor (Research)
University of Southern California, USA	2007/11 ▶ 2010/03	Post Doctoral Fellow
California Institute of Technology, USA	2007/11 ▶ 2010/03	Visitor in Aeronautics
Harvard University, USA	2007/05 ▶ 2007/10	Post Doctoral Fellow
Harvard University, USA	2001/11 ▶ 2007/05	Grad. Research Associate

FUNDING & GRANTS†

- 2021–2025 ▶ 2M€ ERC Consolidator Grant, PERSISMO (Grant No. 865411)
- 2023–2027 ▶ 100k€ ANR SMEC
- 2023–2026 ▶ 100k€ ANR Univ. Tokyo SESAME
- 2023–2025 ▶ 66k€ SPARC Grant India
- 2018 ▶ 25k€ ENS Actions Incitatives
- 2017 ▶ 6k€ TelluS INSU – action ALEAS

HONORS AND AWARDS

- 2018 CNRS Award for Doctoral Supervision and Research
- 2018 Grand Prix Michel Gouilloud Schlumberger, French Academy of Sciences
- 2006 Harvard University Certificate of Distinction in Teaching
- 2004 Harvard University Certificate of Distinction in Teaching
- 2003 Harvard University Certificate of Distinction in Teaching

CURRENT TEACHING RESPONSIBILITIES AT ÉCOLE POLYTECHNIQUE†

Mécanique du Milieu continu · Mécanique des Solides · Mécanique de la Rupture · Mécanique des matériaux et des structures

STUDENTS

Postdoctoral Associates

		Current Position
Ankit Gupta (India)	2024–2026	
Suli Yao (China)	2025–2027	
Navid Kheirdast (Iran)	2022–2025	Post Doctoral Fellow at ISTEP
Michelle Almakari (France)	2021–2023	
Carlos D. Villafuerte (Mexico)	2021–2023	Asst. Prof. UNAM
Ekeabino Momoh (Nigeria)	2019–2022	AXA Postdoc Fellow
Lucile Bruhat (France)	2018–2021	Natural Catastrophe Risk Analyst at AXA
Lisa Gordeliy (Russia)	2019–2019	Senior Engineer ResFrac
Marion Y. Thomas (France)	2014–2016	CNRS Scientist at Université de Rennes

PhD Students

		Current Position
Bharath Shanmugasundaram (India)	2024–2027	
Yishuo Zhou (China)	2024–2027	
Thomas Melkior (France)	2023–2026	
Caiyuan Fan (China)	2023–2027	
Jinhui Cheng (China)	2021–2024	Postdoc Caltech
Augustin Thomas (France)	2020–2023	Research Scientist, BRGM
Joseph Flores Cuba (Peru)	2020–2023	Data Scientist PowerBI
Claudia Hulbert (France)	2018–2021	CEO Geolabe
Samson Marty (France)	2017–2020	Postdoc at Caltech
Marshall A. Martinez (USA)	2014–2019	Engineer at Joby Aviation
Kurama Okubo (Japan)	2015–2018	Research Scientist at NIED, Japan
Pierre Romanet (France)	2014–2017	Research Scientist at Cerema, France
Vahe Gabuchian (USA)	2010–2015	Research Scientist at Caltech
François X. Passelègue (France)	2011–2014	CNRS Scientist at GeoAzur, Nice
Jonathan Mihaly (USA)	2008–2013	Jet Propulsion Laboratory
Michael Mello (USA)	2007–2012	Teaching Professor at Caltech

Undergraduate and Masters Interns

Valentin Marnat (2022) · Roxane Ferry (2021) · Jinhui Cheng (2020) · Phillipe Danre (2019) · Roxane Ferry (2019) · Hugo Lestrelin (2019) · Nicolas Mercury (2018) · Luc Illien (2018) · Phillipe Danre (2017) · Eleni Kolokytha (2015) · Victor Barolle (2015) · Kurama Okubo (2014) · Thibaut Perol (2013) · Lucile Bruhat (2012) · Marion Olives (2004) · Sonia Fliss (2003)

PAST TEACHING ACTIVITIES†

Mécanique des Milieux Continus · Active Faults: Geometry · Seismic Ruptures and Scaling Laws · Introduction to Rock Physics · Mathematical Methods in the Sciences · Environmental Risks and Disasters · Ordinary and Partial Differential Equations · Complex and Fourier Analysis · Computational Solid and Structural Mechanics · Solid Mechanics · Introduction to the Mechanics of Solids · Mechanics of Fracture · Advanced Geomechanics · Mécanique de la Fracturation

† Classes taught with various colleagues at Harvard, Caltech, IPGP, ENS

ORGANIZATION OF SCIENTIFIC MEETINGS

- **Jan 2026:** Earthquake Source: Mechanics, Seismology and Geology Workshop – NISER, India
- **Apr 2024:** Across the time scales, from earthquakes to earthquake cycle – EGU 2024
- **Apr 2023:** Across the time scales, from earthquakes to earthquake cycle – EGU 2023
- **Jun 2019:** Coupled Processes In Fracture Propagation In Geo-Materials: From Hydraulic Fractures To Earthquakes – CISM Advanced School, Udine, Italy
- **Apr 2015:** Seismological Society of America, Multiscale Modeling and Characterization of Fragmentation and Damage Patterns in Fault Zones
- **Dec 2014:** American Geophysical Union, Fault Zone Properties And Processes During Dynamic Ruptures

INSTITUTIONAL RESPONSIBILITIES

- 2018–2024: Team Leader of Faults & Earthquakes Group, ENS
- 2018–2019: Co-organizer of the Internal Seminar, ENS
- 2025: Member HCERES committee for ISterre, Univ. Grenoble
- 2025 onwards: Member AGU Jason Morgan Award Jury

REVIEWING ACTIVITIES

American Geophysical Union · Seismological Society of America · International Journal of Fracture · Geological Society of America · Science · Nature · Journal of the Mechanics and Physics of Solids · European Journal of Mechanics – A/Solids · Earth and Planetary Science Letters · Geophysical Research Letters · Journal of Structural Geology · Proceedings of the National Academies of Science, USA · Geology · Geophysical Journal International · Journal of Applied Mechanics · National Science Foundation · European Research Council · Nature Communications · Nature Geoscience · Science Advances

BOOKS

Thomas, M. Y., Mitchell, T. M., and **Bhat, H. S.** (2017). *Fault zone dynamic processes : Evolution of fault properties during seismic rupture, geophysical monograph 227*. **American Geophysical Union (AGU)** <https://doi.org/10.1002/9781119156895>.

Bizzarri, A., and **Bhat, H. S.** (2012). *The mechanics of faulting: From laboratory to earthquakes*. **Research Signpost**.

BOOK CHAPTERS

Thomas, M. Y., and **Bhat, H. S.** (2022a). *Loi de friction et modélisation numérique du cycle sismique*. in *Le cycle sismique*, eds. Rolandone, F., ed. ISTE-Wiley. <https://doi.org/10.51926/iste.9038.ch4>.

Thomas, M. Y., and **Bhat, H. S.** (2022b). *Friction laws and numerical modeling of the seismic cycle*. in *The seismic cycle: From observation to modeling*, eds. Rolandone, F., ed. ISTE-Wiley. <https://doi.org/10.1002/9781394173709.ch4>.

PUBLICATIONS

Google Scholar: ZHskR34AAAAJ · ORCID: 0000-0003-0361-1854

2026

Bhagat, R., Sreejith, K., Gahalaut, V., **Bhat, H. S.**, and Bhattacharya, P. (2026a). *Complex spatio-temporal migration and triggering mechanisms of a seismic swarm in the indian plate interior*. in prep.

Bhagat, R., Sreejith, K., Satriano, C., Gahalaut, V., **Bhat, H. S.**, and Bhattacharya, P. (2026b). *Aseismic slip and low-frequency earthquakes within an intraplate seismic swarm: The role of fault network geometry*. in prep.

Kheirdast, N., **Bhat, H. S.**, Almakari, M., Gupta, A., Villafuerte, C., Thomas, M. Y., and Dubernet, P. (2026). *Energy budget of spectrum of slip dynamics emerging from simplified model of fault and damage zone architecture*. **to be subm. J. Geophys. Res.**

Garagash, D. I., Brantut, N., **Bhat, H. S.**, Schubnel, A., and Jolivet, R. (2026). *Low effective stress along faults caused by upwelling fluid flow in laboratory and nature*. **to be subm. J. Geophys. Res.**

Gupta, A., **Bhat, H. S.**, Faulkner, D. R., Bhattacharya, P., and Bollinger, L. (2026). *A model for intraplate fault zones using rate and state friction law.* **to be subm. J. Geophys. Res.**

Cheng, J., **Bhat, H. S.**, Almakari, M., Lecampion, B., and Dubernet, P. (2026). *Quantifying the role of 3D fault geometry complexities on slow and fast earthquakes.* **under review Geophys. Res. Lett** <https://doi.org/10.48550/arxiv.2602.16403>.

Zhou, Y., Gupta, A., Aochi, H., Schubnel, A., Ide, S., and **Bhat, H. S.** (2026). *Theoretical constraints on tidal triggering of slow earthquakes.* **under review J. Geophys. Res** <https://doi.org/10.48550/arxiv.2602.06703>.

Wang, C., Wang, P., Wu, B., **Bhat, H. S.**, Bhattacharya, P., Xie, Y., Xia, K., and Schubnel, A. (2026). *Complex fault slip behavior modulated by injection rate with implications to hazard mitigation of induced seismicity.* **under review Science.**

Almakari, M., Kheirdast, N., Villafuerte, C. D., Thomas, M. Y., Dubernet, P., Cheng, J., Gupta, A., Romanet, P., Chaillat, S., and **Bhat, H. S.** (2026). *Fault volume digital twin to reproduce the full slip spectrum, scaling and statistical laws.* **under review J. Geophys. Res** <https://doi.org/10.48550/arxiv.2509.04909>.

Melkior, T., **Bhat, H. S.**, and Amlani, F. (2026). *Tsunami modeling with dynamic seafloors: A high-order solver validated with shallow water benchmarks.* **under review J. Comput. Phys** <https://doi.org/10.48550/arXiv.2508.20596>.

Michel, S., Scotti, O., Hok, S., **Bhat, H. S.**, Kheirdast, N., Romanet, P., Almakari, M., and Cheng, J. (2026). *A rate-and-state friction based criterion for the probability of earthquake fault jumps.* **under review J. Geophys. Res** <https://doi.org/10.48550/arxiv.2501.15948>.

2025

Latour, S., Lebihain, M., **Bhat, H. S.**, Twardzik, C., Bletery, Q., Hudnut, K. W., and Passelègue, F. (2025). *Direct estimation of earthquake source properties from a single CCTV camera.* **Science**, <https://doi.org/10.1126/science.adz1705>.

Cheng, J., Almakari, M., Peruzzo, C., Lecampion, B., and **Bhat, H. S.** (2025). *FASTDASH, a quasi-dynamic 3D seismic cycle model by using boundary element method with h-matrices.* **Geophys. J. Int** <https://doi.org/10.1093/gji/ggaf230>.

Momoh, E., **Bhat, H. S.**, Tait, S., and Gerbault, M. (2025). *Volumetric (dilatant) plasticity in geodynamic models and implications on thermal dissipation and strain localization.* **Geophys. J. Int.**, <https://doi.org/10.1093/gji/ggae463>.

Ferry, R., Thomas, M. Y., **Bhat, H. S.**, and Dubernet, P. (2025). *Depth dependence of coseismic off-fault damage and its effects on rupture dynamics.* **J. Geophys. Res.**, e2024JB029787. <https://doi.org/10.1029/2024jb029787>.

2024

Petit, L., Olive, J.-A., Schubnel, A., Le Pourhiet, L., and **Bhat, H. S.** (2024). *A brittle constitutive law for long-term tectonic modeling based on sub-critical crack growth.* **to appear in Geochem. Geophys. Geosyst.**, <https://doi.org/10.1029/2023gc011229>.

2023

Jeandet-Ribes, L., Thomas, M. Y., and **Bhat, H. S.** (2023). *On the importance of setting 3-d stress field in simulations of on- and off-fault deformation.* **Geophys. J. Int.**, <https://doi.org/10.1093/gji/ggad401>.

2022

Marty, S., Schubnel, A., **Bhat, H. S.**, Aubry, J., Fukuyama, E., Latour, S., Nielsen, S., and Madariaga, R. (2023). *Nucleation of laboratory earthquakes: Quantitative analysis and scalings.* **J. Geophys. Res.**, 128. <https://doi.org/10.1029/2022jb026294>.

Amlani, F., **Bhat, H. S.**, Simons, W. J. F., Schubnel, A., Vigny, C., Rosakis, A. J., Efendi, J., Elbanna, A., Dubernet, P., and Abidin, H. Z. (2022). *Supershear shock front contribution to the tsunami from the 2018 mw 7.5 palu, indonesia earthquake.* **Geophys. J. Int.**, <https://doi.org/10.1093/gji/ggac162>.

2021

Jara, J., Bruhat, L., Thomas, M. Y., Antoine, S., Okubo, K., Klinger, Y., Jolivet, R., and **Bhat, H. S.** (2021). *Signature of transition to supershear rupture speed in coseismic off-fault damage zone*. **Proc. R. Soc. A.**, <https://doi.org/10.1098/rspa.2021.0364>.

Elbanna, A., Abdelmeguid, M., Ma, X., Amlani, F., **Bhat, H. S.**, Synolakis, C., and Rosakis, A. J. (2021). *Anatomy of strike slip fault tsunami genesis*. **Proc. Natl. Acad. Sci. USA** <https://doi.org/10.1073/pnas.2025632118>.

Bhat, H. S. (2021). *Supershear earthquakes*. **PhD thesis**, Habilitation à Diriger des Recherches, Ecole Normale Supérieure.

2020

Jeandet-Ribes, L., Cubas, N., **Bhat, H. S.**, and Steer, P. (2020). *Response of a single fault to transient normal stress change, and implications of large erosional events on the seismic cycle*. **Geophys. Res. Lett.**, 47. <https://doi.org/10.1029/2020gl087631>.

Jolivet, R., Simons, M., Duputel, Z., Olive, J.-A., **Bhat, H. S.**, and Bletery, Q. (2020). *Interseismic loading of subduction megathrust drives long-term uplift in northern Chile*. **Geophys. Res. Lett.**, <https://doi.org/10.1029/2019gl085377>.

Okubo, K., Rougier, E., Lei, Z., and **Bhat, H. S.** (2020). *Modeling earthquakes with off-fault damage using the combined finite discrete element method*. **J. Comp. Part. Mech** <https://doi.org/10.1007/s40571-020-00335-4>.

2019

Okubo, K., **Bhat, H. S.**, Rougier, E., Marty, S., Schubnel, A., Lei, Z., Knight, E. E., and Klinger, Y. (2019). *Dynamics, radiation and overall energy budget of earthquake rupture with coseismic off-fault damage*. **J. Geophys. Res.**, 124. <https://doi.org/10.1029/2019jb017304>.

Marty, S., Passelègue, F. X., Aubry, J., Schubnel, A., **Bhat, H. S.**, and Madariaga, R. (2019). *Origin of high-frequency radiation during laboratory earthquakes*. **Geophys. Res. Lett.**, 46. <https://doi.org/10.1029/2018gl080519>.

2018

Aubry, J., Passelègue, F. X., Deldicque, D., Girault, F., Marty, S., Lahfid, A., **Bhat, H. S.**, Escartin, J., and Schubnel, A. (2018). *Frictional heating processes and energy budget during laboratory earthquakes*. **Geophys. Res. Lett.**, 45. <https://doi.org/10.1029/2018gl079263>.

Klinger, Y., Okubo, K., Vallage, A., Champenois, J., Delorme, A., Rougier, E., Lei, Z., Knight, E. E., Munjiza, A., Satriano, C., **et al.** (2018). *Earthquake damage patterns resolve complex rupture processes*. **Geophys. Res. Lett.** <https://doi.org/10.1029/2018gl078842>.

Cruz-Atienza, V. M., Villafuerte, C. D., and **Bhat, H. S.** (2018). *Rapid tremor migration and pore-pressure waves in subduction zones*. **Nat. Commun.**, <https://doi.org/10.1038/s41467-018-05150-3>.

Thomas, M. Y., and **Bhat, H. S.** (2018). *Dynamic evolution of off-fault medium during an earthquake: A micromechanics based model*. **Geophys. J. Int.**, <https://doi.org/10.1093/gji/ggy129>.

Romanet, P., **Bhat, H. S.**, Jolivet, R., and Madariaga, R. (2018). *Fast and slow earthquakes emerge due to fault geometrical complexity*. **Geophys. Res. Lett.** <https://doi.org/10.1029/2018gl077579>.

2017

Gabuchian, V., Rosakis, A. J., **Bhat, H. S.**, Madariaga, R., and Kanamori, H. (2017). *Experimental evidence that thrust earthquake ruptures might open faults*. **Nature**, 545. <https://doi.org/10.1038/nature22045>.

Thomas, M. Y., **Bhat, H. S.**, and Klinger, Y. (2017). *Effect of brittle off-fault damage on earthquake rupture dynamics*. in *Fault zone dynamic processes : Evolution of fault properties during seismic rupture, geophysical monograph 227*, eds. Thomas, M. Y., **Bhat, H. S.**, and Mitchell, T. M., eds., pp. 255–280. American Geophysical Union (AGU). <https://doi.org/10.1002/9781119156895.ch14>.

Passelègue, F. X., Latour, S., Schubnel, A., Nielsen, S., **Bhat, H. S.**, and Madariaga, R. (2017). *Precursory processes during laboratory earthquakes*. in *Fault zone dynamic processes : Evolution of fault properties during seismic rupture, geophysical monograph 227*, eds. Thomas, M. Y., **Bhat, H. S.**, and Mitchell, T. M., eds., pp. 229–242. American Geophysical Union (AGU). <https://doi.org/10.1002/9781119156895.ch12>.

- Perol, T., and **Bhat, H. S.** (2016). *Micromechanics based permeability evolution in brittle materials at high strain rates*. **Pure Appl. Geophys.**, 1–12. <https://doi.org/10.1007/s00024-016-1354-4>.
- Passelègue, F. X., Schubnel, A., Nielsen, S., **Bhat, H. S.**, Deldicque, D., and Madariaga, R. (2016). *Dynamic rupture processes inferred from laboratory microearthquakes*. **J. Geophys. Res.**, 121. <https://doi.org/10.1002/2015jb012694>.
- Mello, M., **Bhat, H. S.**, and Rosakis, A. J. (2016). *Spatiotemporal properties of sub-rayleigh and supershear rupture velocity fields : Theory and experiments*. **J. Mech. Phys. Solids**, <https://doi.org/10.1016/j.jmps.2016.02.031>.
- 2015
- Vallage, A., Klinger, Y., Grandin, R., **Bhat, H. S.**, and Pierrot-Deseilligny, M. (2015). *Inelastic surface deformation during the 2013 mw 7.7 balochistan, pakistan, earthquake*. **Geology**, <https://doi.org/10.1130/g37290.1>.
- Frank, W. B., Shapiro, N. M., Husker, A. L., Kostoglodov, V., **Bhat, H. S.**, and Campillo, M. (2015). *Along-fault pore-pressure evolution during a slow-slip event in guerrero, mexico*. **Earth Planet. Sc. Lett.**, <https://doi.org/10.1016/j.epsl.2014.12.051>.
- Siriki, H., **Bhat, H. S.**, Lu, X., and Krishnan, S. (2015). *A laboratory earthquake-based stochastic seismic source generation algorithm for strike-slip faults*. **Bull. Seism. Soc. Am.**, <https://doi.org/10.1785/0120140110>.
- 2014
- Mello, M., **Bhat, H. S.**, Rosakis, A. J., and Kanamori, H. (2014). *Reproducing the supershear portion of the 2002 denali earthquake rupture in laboratory*. **Earth Planet. Sc. Lett.**, <https://doi.org/10.1016/j.epsl.2013.11.030>.
- 2013
- Passelègue, F. X., Schubnel, A., Nielsen, S., **Bhat, H. S.**, and Madariaga, R. (2013). *From sub-rayleigh to supershear ruptures during stick-slip experiments on crustal rocks*. **Science**, <https://doi.org/10.1126/science.1235637>.
- 2012
- Bhat, H. S.**, Rosakis, A. J., and Sammis, C. G. (2012). *A micromechanics based constitutive model for brittle failure at high strain rates*. **J. Appl. Mech.**, 79. <https://doi.org/10.1115/1.4005897>.
- 2011
- Bhat, H. S.**, Sammis, C. G., and Rosakis, A. J. (2011). *The micromechanics of westerley granite at large compressive loads*. **Pure Appl. Geophys.**, <https://doi.org/10.1007/s00024-011-0271-9>.
- 2010
- Bhat, H. S.**, Biegel, R. L., Rosakis, A. J., and Sammis, C. G. (2010). *The effect of asymmetric damage on dynamic shear rupture propagation II: With mismatch in bulk elasticity*. **Tectonophysics**, <https://doi.org/10.1016/j.tecto.2010.03.016>.
- Biegel, R. L., **Bhat, H. S.**, Sammis, C. G., and Rosakis, A. J. (2010). *The effect of asymmetric damage on dynamic shear rupture propagation I: No mismatch in bulk elasticity*. **Tectonophysics**, <https://doi.org/10.1016/j.tecto.2010.03.020>.
- Mello, M., **Bhat, H. S.**, Rosakis, A. J., and Kanamori, H. (2010). *Identifying the unique ground motion signatures of supershear earthquakes: Theory and experiments*. **Tectonophysics**, <https://doi.org/10.1016/j.tecto.2010.07.003>.
- Templeton, E. L., **Bhat, H. S.**, Dmowska, R., and Rice, J. R. (2010). *Dynamic rupture through a branched fault configuration at yucca mountain and resulting ground motions*. **Bull. Seism. Soc. Am.**, <https://doi.org/10.1785/012009012110.1785/0120090121>.
- 2009
- Harris, R. A., Barall, M., Archuleta, R. J., Dunham, E. M., Aagaard, B., Ampuero, J.-P., **Bhat, H. S.**, Cruz-Atienza, V., Dalguer, L., Dawson, P., *et al.* (2009). *The SCEC/USGS dynamic earthquake rupture code verification exercise*.

Seismol. Res. Lett., 80. <https://doi.org/10.1785/gssrl.80.1.119>.

Sammis, C. G., Rosakis, A. J., and **Bhat, H. S.** (2009). *Effects of off-fault damage on earthquake rupture propagation: Experimental studies*. **Pure Appl. Geophys.**, 166. <https://doi.org/10.1007/s00024-009-0512-3>.

Templeton, E. L., Baudet, A., **Bhat, H. S.**, Dmowska, R., Rice, J. R., Rosakis, A. J., and Rousseau, C. E. (2009). *Finite element simulations of dynamic shear rupture experiments and dynamic path selection along kinked and branched faults*. **J. Geophys. Res.**, B08304. <https://doi.org/10.1029/2008jb006174>.

2008

Dunham, E. M., and **Bhat, H. S.** (2008). *Attenuation of radiated ground motion and stresses from three-dimensional supershear ruptures*. **J. Geophys. Res.**, 113. <https://doi.org/10.1029/2007jb005182>.

2007

Bhat, H. S., Dmowska, R., King, G. C. P., Klinger, Y., and Rice, J. R. (2007a). *Off-fault damage patterns due to supershear ruptures with application to the 2001 M_w 8.1 kokoxili (kunlun) tibet earthquake*. **J. Geophys. Res.**, B06301. <https://doi.org/10.1029/2006jb004425>.

Bhat, H. S., Olives, M., Dmowska, R., and Rice, J. R. (2007b). *Role of fault branches in earthquake rupture dynamics*. **J. Geophys. Res.**, B11309. <https://doi.org/10.1029/2007jb005027>.

Bhat, H. S. (2007). *Role of geometric complexities and off-fault damage in dynamic rupture propagation*. **PhD thesis**, Harvard University.

2005

Fliss, S., **Bhat, H. S.**, Dmowska, R., and Rice, J. R. (2005). *Fault branching and rupture directivity*. **J. Geophys. Res.**, B06312. <https://doi.org/10.1029/2004jb003368>.

2004

Bhat, H. S., Dmowska, R., Rice, J. R., and Kame, N. (2004). *Dynamic slip transfer from the denali to totsichunda faults, alaska: Testing theory for fault branching*. **Bull. Seism. Soc. Am.**, <https://doi.org/10.1785/0120040601>.