

CURRICULUM VITAE**• Personal Details**

Name Yuval Tal
 Date and place of birth January 7, 1982, Israel
 Work address Department of Earth and Environmental Sciences, Ben-Gurion, University of the Negev, P.O. Box 653, Beer-Sheva, 84105, Israel
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• Education

B.Sc. 2006 – 2009 Ben-Gurion University of the Negev, Department of Geological and Environmental Sciences (Summa cum Lauda)
 M.Sc. 2009 – 2011 Ben-Gurion University of the Negev, Department of Geological and Environmental Sciences
 Advisor Yossef H. Hatzor
 Title of thesis Modeling the excavation sequence with the numerical Manifold Method
 Ph.D. 2012 – 2017 Massachusetts Institute of Technology, Department of Earth, Atmospheric, and Planetary Sciences
 Advisor Bradford H. Hager
 Title of thesis The role of roughness in earthquake source physics

• Employment History

2019 – present Lecturer, Ben-Gurion University, Beer-Sheva, Israel
 2017 – 2019 Postdoctoral scholar, Seismological Laboratories, California Institute of Technology, California, USA

• Professional Activities

- (a) Ad-hoc reviewer for journals
 Journal of Geophysical Research, Solid Earth
 Earth and Planetary Science Letters
 Geology
 Rock mechanics and rock engineering
 (b) Membership in professional/scientific societies
 2013 – present: American Geophysical Union
 2020 – present: European Geosciences Union
 2016 – 2019: Seismological Society of America

• Educational activities

- (a) Courses taught
 Earthquake and seismic risk - Ben-Gurion University of the Negev

Numerical method in earth sciences - Ben-Gurion University of the Negev
Undergraduate students research projects - Ben-Gurion University of the Negev

(b) Research students

1. Tom Gabrieli, PhD, 2021 -, Ben-Gurion University of the Negev

• **Awards, Citations, Honors,**(a) Honors, Citation Awards (including during studies)

2016, Massachusetts Institute of Technology, Elie Shaio memorial award

2011, Ben-Gurion University, Departmental award for M.Sc. studies

2008, Wolf prize for excellence, for 2nd year B.Sc

2008, Ben-Gurion University, Deptment Chair award, for 2nd year B.Sc. studies

2007, Ben-Gurion University Natural Sciences Faculty Dean's award, for 1st year B.Sc. studies

2006, Zlotovsky scholarship for an outstanding student for B.Sc. degree

(b) Fellowships

2017, Seismological Laboratory Director's Postdoctoral Fellowship (\$54,000), California Institute of Technology

• **Scientific Publications**(a) Refereed chapters in collective volumes and conference proceedings

1. Tal, Y. and Hatzor, Y. H. 2011. Surface settlement due to deep mining with the Numerical Manifold Method. The 12th congress of the international society for rock mechanics (eds. Q. Qian and J. Zhao), October 16-21, Beijing, China.
2. Hatzor, Y. H., Tal, Y., Yagoda-Biran, G. and Feng X. T. 2015. The significance of modeling the excavation sequence in numerical analysis of underground openings. Innovations in applied and theoretical rock mechanics. Proceedings of the 13th ISRM Congress. May 10 – 13, Montreal, Canada.
3. Rubino, V., Tal, Y., Rosakis, A., and Lapusta N. 2021 (accepted). Evolution of dynamic shear strength of frictional interfaces during rapid normal stress variations. DYMAT 2021: the 13th international conference on mechanical and physical behaviour of materials under dynamic loading. September 20 – 24, Madrid, Spain.

(b) Refereed articles and refereed letters in scientific journals

1. Tal, Y., Hatzor, Y. H., and X. T. Feng. 2014. An improved numerical manifold method for simulation of sequential excavation in fractured rocks. *Int. J. Rock Mech. Min. Sci.*, 65, 116–128. (19 citations; IF 4.151; 4/39; Q1)
2. Tal, Y., and B. H. Hager¹. 2015. An empirical study of the distribution of earthquakes with respect to rock type and depth, *Geophys. Res. Lett.*, 42. 7406–7413, DOI:10.1002/2015GL064934.
3. Tal, Y., Evans, B., and U. Mok. 2016. Direct observations of damage during unconfined brittle failure of Carrara marble, *J. Geophys. Res.*, 121(3). 1584–1609, DOI: 10.1002/2015JB012749.
4. Tal, Y., and B. H. Hager. 2018. Dynamic Mortar Finite Element method for modeling of shear rupture on frictional rough interfaces. *Comput. Mech.* DOI: 10.1007/s00466-017-1475-3.
5. Tal, Y., Hager, B. H., and J. P. Ampuero. 2018. The effects of fault roughness on the earthquake nucleation process. *J. Geophys. Res.* 123, 437–456. <https://doi.org/10.1002/2017JB014746>.

6. Tal, Y., and B. H. Hager. 2018. The slip behavior and source parameters for spontaneous slip events on rough faults subjected to slow tectonic loading. *J. Geophys. Res.* 123, 1810–1823. <https://doi.org/10.1002/2017JB014737>.
7. Tal, Y., Rubino, V., Rosakis, A. J., and N. Lapusta. 2019. Enhanced digital image correlation analysis of ruptures with enforced traction continuity conditions across interfaces. *Applied Sciences*. 9, 1625. DOI: 10.3390/app9081625.
8. Tal, Y., Rubino, V., Rosakis A. J., and N. Lapusta. 2020. Illuminating the physics of dynamic friction through laboratory earthquakes on thrust faults. *PNAS*, 117(35) 21095-21100; DOI: 10.1073/pnas.2004590117.
9. Tal, Y., Goebel, T., and J-P. Avouac. 2020. Experimental and modeling study of the effect of fault roughness on dynamic frictional sliding. *EPSL*, 536.
10. Tal, Y., T. and D. Faulkner. 2022. The effect of fault roughness and earthquake ruptures on the evolution and scaling of fault damage zones. *J. Geophys. Res.*, 127. <https://doi.org/10.1029/2021JB023352>.
11. Morad, D., Sagy A., Tal Y., and Y. Hatzor. 2022. Fault Roughness Controls Sliding Instability. *EPSL*, 579.

(c) Published scientific reports and technical papers

1. Lapusta, N. et al., 2019, Modeling Earthquake Source Processes: from Tectonics to Dynamic Rupture, Report to the National Science Foundation.

• **Lectures and Presentations at Meetings and Invited Seminars**

(a) Presentation of papers at conferences/meetings (oral or poster)

1. Tal, Y. and Hager, B. H., 2013, An empirical study of the distribution of earthquakes with respect to rock type and depth, AGU Fall meeting, San Francisco, CA, USA
2. Tal, Y., Evans, B. and Mok, U., 2014, Micro-scale observations of semi-brittle failure in Carrara marble, AGU Fall meeting, San Francisco, CA, USA
3. Tal, Y. and Hager, B. H., 2016, Modeling nucleation and propagation of shear rupture on rough faults with a large range in wavelengths, SSA meeting, 2016, Reno, NV, USA
4. Tal, Y. and Hager, B. H., 2016, Modeling the effect of roughness on the nucleation and propagation of shear rupture, SCEC meeting, Palm Springs, CA, USA
5. Tal, Y. and Hager, B. H., 2016, The effect of roughness on the nucleation and propagation of shear rupture on small faults, AGU Fall meeting, San Francisco, CA, USA
6. Tal, Y. and Lapusta, N., 2018, The effects of roughness and off fault plasticity on the rupture process during multiple slip events, SSA meeting, Miami, FL, USA
7. Tal, Y., Rubino, V., Lapusta, N. and Rosakis A., 2018, Studying the Shear Resistance Response to Rapid Normal-Stress Variations near the Free Surface on Experimental Thrust Faults, SSA meeting, Miami, FL, USA
8. Tal, Y., Rubino, V., Lapusta, N. and Rosakis A., 2018, Evolution of frictional shear resistance in response to rapid variations of normal stress, SCEC meeting, Palm Springs, CA, USA
9. Tal, Y., Goebel T. and Avouac J-P., 2019, Numerical Modeling of Experimental Rock Friction Data for Rough Surfaces, SSA meeting, Seattle, WA, USA

10. Tal, Y., Rubino, V., Lapusta, N. and Rosakis A., 2019, The dynamics of laboratory thrust earthquakes near the free surface, AGU Fall meeting, San Francisco, CA, USA
11. Tal, Y. and Faulkner, D., 2020, The effect of geometrical irregularities on damage zone width: Modeling and field observations, EGU general assembly, Vienna, Austria
12. Rosakis A., Rubino, V., Tal, Y., and Lapusta, N., 2020, Following Individual Ruptures: A New approach for Measuring Dynamic Friction in the Lab, AGU Fall meeting, Online
13. Tal, Y., Rubino, V., Rosakis A., and Lapusta, N., 2021, Thrust-fault dynamics and frictional resistance response inferred through laboratory earthquakes, EGU general assembly, Online

(b) Presentations at informal international seminars and workshops

1. 2018, Sequences of Earthquakes and Aseismic Slip (SEAS) workshop, Southern California Earthquake Center, Modeling the earthquake cycle on rough faults with the mortar finite element method, USA
2. 2019, Caltech Solid Mechanics Symposium, California Institute of Technology, Experimental Study of the Dynamics of Thrust Earthquakes Near the Free Surface, USA

(c) Seminar presentations at universities and institutions

1. 2016, Department of Geophysics, Tel Aviv University, Direct observations of damage during unconfined brittle failure of Carrara marble
2. 2016, Institute of Earth Sciences, Hebrew University of Jerusalem, Direct observations of damage during unconfined brittle failure of Carrara marble
3. 2016, Department of Geological and Environmental Sciences, Ben-Gurion University of the Negev, Direct observations of damage during unconfined brittle failure of Carrara marble
4. 2017, Institute of Earth Sciences, Hebrew University of Jerusalem, The role of roughness in earthquake source physics
5. 2017, Department of Geological and Environmental Sciences, Ben-Gurion University of the Negev, The role of roughness in earthquake source physics
6. 2017, Department of Earth and Planetary Sciences, Weizmann Institute of Sciences, The role of roughness in earthquake source physics
7. 2017, Seismological Laboratories, California Institute of Technology, The role of roughness in earthquake source physics
8. 2020, Department of Earth and Environmental Sciences, Ben-Gurion University of the Negev, Laboratory Earthquakes: Thrust-fault dynamics and frictional resistance response
9. 2021, Israel Geological Survey, Laboratory Earthquakes: Thrust-fault dynamics and frictional resistance response
10. 2021, Department of Geophysics, Tel Aviv University, Laboratory Earthquakes: Thrust-fault dynamics and frictional resistance response

• **Research Grants**

2016	Southern California Earthquake Center Grant	The effect of roughness on the rupture of small faults and the up-scaling of lab friction laws	B. H. Hager Y. Tal	
2019	Southern California Earthquake Center Grant	Evolution of frictional shear resistance in response to rapid variations of normal stress	A. J. Rosakis V. Rubino Y. Tal	
2020	Israel Science Foundation (ISF) New-Faculty Equipment Grant (3092/20)	A laboratory study of the effects of fault non-planarity on the dynamics of earthquake ruptures	Y. Tal	\$163,000
2020-2024	Israel Science Foundation (ISF) Personal Research Grants (1887/20)	A laboratory study of the effects of fault non-planarity on the dynamics of earthquake ruptures	Y. Tal	\$280,000 (total)