

Lauri Uotinen
Assistant Professor
Department of Civil Engineering
Mineral Based Materials and Mechanics
Type of address: Postal address.
Rakentajanaukio 4 A, 02150 Espoo
Email: lauri.uotinen@aalto.fi
Mobile: +358 50 5691015



Prizes

Aalto University School of Engineering Award for Achievements in Teaching 2019

Janiszewski, M. (Recipient) & Uotinen, L. (Recipient), Jan 2020

Best poster award

Uotinen, L. (Recipient), 26 Sept 2013

Best poster award

Uotinen, L. (Recipient), 20 Sept 2012

Sinorock prize for Best Paper by Young Person outside China

Uotinen, L. (Recipient), 20 Jun 2013

Young Rock Engineer Award

Uotinen, L. (Recipient), 24 Sept 2021

Projects

EMMEP/EMC: EMMEP/EMC

Paaso, M. (Project Member), Janiszewski, M. (Project Member), Antikainen, J. (Project Member), Uotinen, L. (Project Member) & Rinne, M. (Principal investigator)

01/01/2014 → 31/12/2018

Fractusan

Rinne, M. (Principal investigator), Oraskari, J. (Project Member), Karttunen, S. (Project Member), Sirkiä, J. (Project Member), Mikkola, S. (Project Member), Uotinen, L. (Project Member), Savikko, H. (Project Member), Munukka, H. (Project Member) & Szydlowska, M. (Project Member)

12/06/2017 → 31/01/2019

GAGS: Geophysical and Geochemical Methods for Slope Design

Baghbanan, A. (Project Member), Kangas, L. (Project Member), Lange, M. (Project Member), Rinne, M. (Principal investigator), Leveinen, J. (Project Member), Kiuru, R. (Project Member), Uotinen, L. (Project Member), Laine, I. (Project Member), Meijs, L. (Project Member), Kangas, L. (Project Member), Lange, M. (Project Member), Janiszewski, M. (Project Member), Pontow, S. (Project Member) & Baghbanan, A. (Project Member)

01/10/2018 → 31/05/2022

I2Mine (CP Large)

Rinne, M. (Principal investigator), Wang, J. (Project Member), Ruan, Y. (Project Member), Song, Z. (Project Member), Mishra, R. (Project Member), Samimi Namin, F. (Project Member), Janiszewski, M. (Project Member), Dong, S. (Project Member), Uotinen, L. (Project Member), Siren, T. (Project Member), Szydlowska, M. (Project Member) & Sirkiä, J. (Project Member)

01/11/2011 → 31/10/2016

ORMID: On-line Risk Management in Deep Mines

Rinne, M. (Principal investigator), Kiuru, R. (Project Member), Mishra, R. (Project Member), Siren, T. (Project Member), Caballero Hernandez, E. (Project Member), Uotinen, L. (Project Member), Nieman, P. (Project Member), Szydlowska, M. (Project Member), Janiszewski, M. (Project Member) & Kantia, P. (Project Member)

01/03/2016 → 31/12/2019

RAKKA: Rakoilleen kalliomassan vedenjohtavuus

Rinne, M. (Principal investigator), Uotinen, L. (Project Member), Torkan, M. (Project Member) & Nieminen, V. (Project Member)

01/02/2019 → 31/01/2020

Reaaliaikainen kalliomekaaninen malli

Rinne, M. (Principal investigator) & Uotinen, L. (Project Member)

01/01/2014 → 31/12/2015

REMOS: REMOS TUTL

Rinne, M. (Principal investigator), Tiainen, J. (Project Member), Rytönen, A. (Project Member), Hulkkonen, T. (Project Member), Thanh Trung, V. (Project Member), Mai, W. (Project Member), Usman, M. (Project Member), Karttunen, S. (Project Member), Uotinen, L. (Project Member), Janiszewski, M. (Project Member) & Hedström, O. (Project Member)

01/06/2019 → 30/04/2021

MIRKA_2024 (VYR/SAFER2028): Scale-effect in fractured rock mass

Rinne, M. (Principal investigator), Torkan, M. (Project Member), Uotinen, L. (Project Member), Hakala, V.-A. (Project Member), Aydogmus, M. (Project Member) & Liyanarathna Vidanage, S. (Project Member)

01/01/2024 → 31/01/2025

Tackling the Challenges of a Solar Community Concept in High latitudes

Rinne, M. (Principal investigator), Siren, T. (Project Member), Uotinen, L. (Project Member), Oosterbaan, H. (Project Member) & Janiszewski, M. (Project Member)

01/01/2015 → 31/12/2017

VYR KARMO II

Rinne, M. (Principal investigator), Sirkiä, J. (Project Member), Hedström, O. (Project Member), Antikainen, J. (Project Member), Uotinen, L. (Project Member) & Lumikoivu, A. (Project Member)

01/02/2015 → 31/01/2016

VYR KARMO III 2017

Rinne, M. (Principal investigator), Uotinen, L. (Project Member), Hedström, O. (Project Member) & Caballero Hernandez, E. (Project Member)

01/01/2017 → 31/01/2018

VYR KARMO III 2018

Rinne, M. (Principal investigator), Uotinen, L. (Project Member), Szydłowska, M. (Project Member), Baghbanan, A. (Project Member), Caballero Hernandez, E. (Project Member) & Hakala, V.-A. (Project Member)

01/02/2018 → 31/01/2019

Activities

International Workshop on Fracturing Geomechanics

Janiszewski, M. (Member), Rinne, M. (Chair), Uotinen, L. (Member), Hedström, O. (Member), Suikkanen, J. (Member), Shen, B. (Chair) & Stephansson, O. (Member)

12 Jun 2019 → 13 Jun 2019

Eurock 2015, Salzburg, 6.10.-9.10.2015, Austria

Uotinen, L. (Contributor)

2015

The 13th International ISRM Congress 2015 International Congress on Rock Mechanics, Montreal, 10.-13.5.2016, Canada

Uotinen, L. (Contributor)

2015

KTH Royal Institute of Technology
Uotinen, L. (Visiting researcher)
2014

University
Uotinen, L. (Student)
2014

University (External organisation)
Uotinen, L. (Chair)
2012

Research outputs

Rock wall characterization using high-speed vehicle-mounted videogrammetry

Uotinen, L., Janiszewski, M., Torkan, M., Munukka, H. & Rinne, M., 2025, *Tunnelling into a Sustainable Future – Methods and Technologies- World Tunneling Congress 2025*. CRC Press, 8 p.

Interactive and parametrized exercises in engineering education at Aalto University

Uotinen, L., Janiszewski, M. & Rinne, M., 6 Sept 2023.

Method for estimating rockfall failure probability using photogrammetry

Uotinen, L., Janiszewski, M., Mishra, R., Munukka, H., Szydlowska, M., Martinelli, D. & Dabove, P., 6 Sept 2021, In: IOP Conference Series: Earth and Environmental Science. 833, 1, 8 p., 012063.

Photogrammetric prediction of rock fracture properties and validation with metric shear tests

Uotinen, L., Torkan, M., Baghbanan, A., Hernández, E. C. & Rinne, M., Jul 2021, In: *Geosciences*. 11, 7, 31 p., 293.

Characterization of hydro-mechanical properties of rock fractures using steady state flow tests

Uotinen, L., Torkan, M., Janiszewski, M., Baghbanan, A., Nieminen, V. & Rinne, M., 13 Nov 2020, *ISRM International Symposium - EUROCK 2020*. Li, C. C., Odegaard, H., Høien, A. H. & Macias, J. (eds.). Norsk Betongforening, 8 p.

Kalliorakenteiden digitointi valokuvamittauksen avulla

Uotinen, L., 23 Oct 2019, In: *Geofoor*. 49, p. 22-23 2 p.

Photogrammetry for recording rock surface geometry and fracture characterization

Uotinen, L., Janiszewski, M., Baghbanan, A., Caballero Hernandez, E., Oraskari, J., Munukka, H., Szydlowska, M. & Rinne, M., 17 Sept 2019, *Proceedings of the 14th International Congress on Rock Mechanics and Rock Engineering (ISRM 2019), Foz do Iguassu, Brazil, 13-18 September 2019: Rock Mechanics for Natural Resources and Infrastructure Development - Full Papers*. da Fontoura, S. A. B., Rocca, R. J. & Pavón Mendoza, J. F. (eds.). CRC Press, p. 461-468 8 p. (Proceedings in Earth and geosciences; vol. 6).

Prediction of stress-driven rock mass damage in spent nuclear fuel repositories in hard crystalline rock and in deep underground mines

Uotinen, L., 2018, Aalto University. 164 p.

Elastoplastic Modelling of an In Situ Concrete Spalling Experiment using the Ottosen Failure Criterion

Uotinen, L. & Siren, T., 31 Jan 2017, In: *Journal of Engineering*. 2017, 17 p., 4723017.

A method to downscale joint surface roughness and to create replica series using 3D printed molds

Uotinen, L., Korpi, E., Hartikainen, A., Yorke, R., Antikainen, J., Johansson, F. & Rinne, M., 2017, *ISRM 13th International Congress on Rock Mechanics, Montreal, May 10-13, 2015*. Canadian Institute of Mining, Metallurgy and Petroleum, 11 p.

Modified yield-line theory approach to determine sprayed concrete flexural capacity

Uotinen, L., Suikkanen, J. & Siren, T., 2014, *7th International Symposium on Sprayed Concrete, Sandefjord, Norway, 16.-19. June 2014: Modern Use of Wet Mix Sprayed Concrete for Underground Support*. Beck, T., Woldmo, O. & Engen, S. (eds.). Norwegian Society of Graduate Technical and Scientific Professionals (Tekna), p. 387-400

Design of sprayed concrete as hard rock reinforcement using yield-line theory

Uotinen, L. K. T., Salo, O. & Rinne, M., 2013, *Rock Characterisation, Modelling and Engineering Design Methods - Proceedings of the 3rd ISRM SINOROCK 2013 Symposium*. CRC Press, p. 817-822 6 p.

In-situ experiment concerning thermally induced spalling of circular shotcreted shafts in deep crystalline rock

Uotinen, L., Siren, T., Martinelli, D. & Hakala, M., 2013, *World Tunnel Congress 2013, Switzerland, May 31- June 7, 2013*. Anagnostou, G. & Ehrbar, H. (eds.). London: Taylor & Francis, p. 808-815

Semiautomatic Characterization of Rock Masses Using Photogrammetry, 3D Printing Technology and Ground Penetrating Radar

Uotinen, L., Song, Z., Hedström, O., Huuskonen-Snicker, E., Toivanen, T.-L., Palmén, J. & Hokkanen, T., 2013, p. 108-108. 1 p.

Rock engineering design process in ONKALO rock characterisation facility

Uotinen, L., Nuijten, G., Martinelli, D., Lehmusjärvi, R. & Rinne, M., 30 May 2012, *Rock Engineering and Technology for Sustainable Underground Construction EUROCK 2012, Stockholm 28-30.5.2012*. Stockholm: International Society for Rock Mechanics (ISRM), 11 p.

Assessment of the Potential for Rock Spalling in the Technical Rooms of the ONKALO: Work Report 2011-35

Uotinen, L., Siren, T. & Martinelli, D., 10 Aug 2011, Posiva Oy, 40 p.

Design of shotcrete rock reinforcement in hard rock according to Eurocode

Uotinen, L., 6 Jun 2011, *Seminar on Geoengineering*. 21 p.

Eurocodes in Hard Rock Engineering in Finland

Uotinen, L., Nuijten, G., Siren, T., Stöm, J., Hakala, M. & Rinne, M., 22 May 2011, *ITA-AITES World Tunnel Congress, Helsinki 20-26.5.2011*. Helsinki: Finnish Tunnelling Association, p. 126-127

Stochastically Determined Safety of Underground Structures According to Eurocode

Uotinen, L., Siren, T. & Lehmusjärvi, R., 2 Oct 2009, *Get Underground 2009: Underground Space Seminar*. 10 p.

Press/Media

Australia Patent: Aalto University Foundation sr Files Application for 'Method, system, and computer program product for a real-time estimation of risk in an excavation'

Janiszewski, M. & Uotinen, L.

03/02/2023

1 item of Media coverage

Australia Patent: Aalto University Foundation sr Files Application for 'Method, system and computer program product for real-time monitoring of stress changes in an excavation'

Uotinen, L.

03/02/2023

1 item of Media coverage

Infraprofessori yhdistää teoriaa ja käytäntöä

Uotinen, L.

08/10/2025

1 item of Media coverage

Researcher from Aalto University Details Findings in Applied Sciences (Improvements in Rock Mass Description for Slope Design by Geophysical and Geochemical Methods)

Janiszewski, M., Rinne, M., Uotinen, L., Kiuru, R. & Laine, I.

08/02/2024

1 item of Media coverage

Study Findings from Aalto University Broaden Understanding of Remote Sensing (Rapid Photogrammetry with a 360-Degree Camera for Tunnel Mapping)

Janiszewski, M., Rinne, M. & Uotinen, L.

29/11/2022

1 item of Media coverage

Suomalaistutkija sai merkittävän palkinnon – tutki kivien putoamista kallioleikkauksissa

Uotinen, L.

30/09/2021 → 01/10/2021

1 item of Media coverage, 1 Media contribution