FracID

2026

FROM PHYSICS-BASED MODELS TO BAYESIAN AND MACHINE-LEARNING FRAMEWORKS

SPLIT 30.01.

**VIJEĆNICA FGAG
UNIVERSITY OF SPLIT**

REGISTRATION BEFORE 22.01.

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09:00 – 09:10 Mijo Nikolić: Opening ceremony, FracID project results

09:10 – 09:20 Hrvoje Kozmar: A word from Croatian Society of Mechanics

09:20 – 09:50 Noemi Friedman: Bayesian inference for calibration and enhancement of physics-based models (online)

09:50 – 10:10 Ivan Depina: Physics informed neural networks and uncertainty quantification (online)

10:10 – 10:40 Coffee break

10:40 – 11:00 Zvonimir Tomičević: Volumetric fracture characterization: An experimental mechanics perspective

11:00 – 11.20 Eduard Marenić: Data driven computing

11:20 – 11:40 Hrvoje Gotovac: Physics informed neural networks: Overview

11:40 – 12:00 Matej Šodan: Bayesian identification in fracture problems

12:00 – 14:30 Lunch break

14:30 – 15:00 Fadi Aldakheel: Physics-based machine learning for computational failure mechanics (online)

15:00 – 15:20 Jadran Čarija: Lattice model for 3D fracture

15:20 – 15:40 Duje Pavić: Bayesian identification for calibration of discrete models

15:40 – 16:00 Mijo Nikolić: Open discussion, research and mechanics, industry, complex problems, collaboration, future perspectives

HrZZ Croatian Science Foundation

University of Split

HDM

FROM PHYSICS-BASED MODELS TO BAYESIAN AND MACHINE-LEARNING FRAMEWORKS

Aim and scope

Welcome to the conference From Physics-Based Models to Bayesian and Machine Learning Frameworks.

This one-day conference, supported by the **Croatian Science Foundation** and the **Croatian Society of Mechanics**, represents the final event of the project *Parameter Estimation Framework for Fracture Propagation Problems under Extreme Mechanical Loads*. It aims to bring together researchers and scientists working in the joint fields of mechanics, data-driven methods, artificial intelligence, and machine learning. The conference explores emerging research perspectives where classical physics-based models are integrated within Bayesian frameworks to achieve enhanced predictive capabilities, and where neural networks enriched with physical principles improve accuracy while significantly reducing computational cost.

Plenary lectures

The scientific program features plenary lectures by leading experts in the field, including **Noemi Friedman** (SZTAKI Budapest – Institute for Computer Science and Control), **Fadi Aldakheel** (Leibniz Universität Hannover), **Ivan Depina** (NTNU, Department of Civil and Environmental Engineering), **Zvonimir Tomičević** (Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb), **Eduard Marenić** (INSA Toulouse), and **Hrvoje Gotovac** (Faculty of Civil Engineering, Architecture and Geodesy, University of Split). Their contributions will provide insights into state-of-the-art developments and future directions of physics-informed, Bayesian, and machine-learning-based approaches in mechanics.

VENUE

Vijećnica, Fakultet građevinarstva, arhitekture i geodezije, Matice hrvatske 15, Split

Online (Teams link): https://bit.ly/4jGD9qL

REGISTRATION BEFORE 22.01.

Registration is free. To register, please send an email to Mijo Nikolić (before 22.01.) indicating your intention to attend the conference. Online participants are not required to register. Coffee and lunch breaks are included for all registered participants attending the conference in person.

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