

CALIFORNIA INSTITUTE OF TECHNOLOGY

Division of Engineering and Applied Science
Division of Geological and Planetary Sciences
Pasadena, California 91125

Deep Dive 2025: Optimization and Control

Geomechanics and Mitigation of Geohazards (GMG)

July 22–23, 2025

Virtual Event

8:00 AM – 11:00 AM Pacific Time

Day 1: Tue, July 22, 2025

- **8:00 – 8:05 AM** K.J. Im and Hojjat Kaveh
Opening remarks
- **8:05 – 8:50 AM** Hojjat Kaveh
Talk Title: Inverse Problems and Data Assimilation in subsurface geophysics with a machine learning and earthquake forecasting flavor
- **8:50 – 9:35 AM** Andrei Swidinsky
Talk Title: Optimal control of subsurface fluid flow through Deep Reinforcement Learning
- **9:35 – 9:50 AM** Break
- **9:50 – 10:35 AM** Rikuto Fukushima
Talk Title: Adjoint-based and deep learning-based inversion for fault friction from geodetic and seismic observations
- **10:35 – 11:00 AM** Discussion + Q&A

Day 2: Wed, July 23, 2025

- **8:00 – 8:45 AM** Taeho Kim
Talk Title: Control & Optimization of Induced Seismicity and Geothermal Stimulation: A Field Case Analysis of the 2018 Otaniemi Stimulation
 - **8:45 – 9:30 AM** Ioannis Stefanou
Talk Title: Smart Control Systems for Induced Seismicity Prevention and Production Optimization: Part 1 Overview of Control Theory and AI
 - **9:30 – 9:45 AM** Break
 - **9:45 – 10:30 AM** Diego Gutiérrez-Oribio
Talk Title: Smart Control Systems for Induced Seismicity Prevention and Production Optimization: Part 2 Control Theory and Applications
 - **10:30 – 11:00 AM** Discussion + Q&A
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