



***ALERT Geomaterials***

Alliance of Laboratories in Europe for Education, Research and Technology

<http://alertgeomaterials.eu>

# **34<sup>th</sup> ALERT Workshop and School**

Aussois, 25<sup>th</sup> September to 30<sup>th</sup> September 2023

**Preliminary Program**  
(June 2023)



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## **34<sup>th</sup> ALERT Workshop Program**

**Aussois, 25<sup>th</sup> September 2023**

### **SESSION I: Energy geomechanics**

Coordinators: Jean-Michel PEREIRA (École Nationale des Ponts et Chaussées), Carlos SANTAMARINA (Georgia Tech), Diego MANZANAL (Universidad Politécnica de Madrid)



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## **34<sup>th</sup> ALERT Workshop Program**

**Aussois, 26<sup>th</sup> September 2023**

### **SESSION II: Special Session on Extraterrestrial geomechanics**

Coordinators: Pierre DELAGE (École Nationale des Ponts et Chaussées),  
Felipe PRADA (Aarhus University)



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## **34<sup>th</sup> ALERT Workshop Program**

**Aussois, 27<sup>th</sup> September 2023**

### **SESSION III: Anisotropy in geomaterials: theory, experiments and modelling**

Organizers: Eleni GEROLYMATOU (Technische Universität Clausthal), Cino VIGGIANI (Université Grenoble-Alpes), Angelo AMOROSI (Sapienza Università di Roma)



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**34<sup>th</sup> ALERT Doctoral School**

**Aussois, 28<sup>th</sup> September 2023**

## **Machine Learning (ML) in Geomechanics**

**Coordinators:**

**Prof. Ioannis Stefanou, EC-Nantes**

**Prof. Félix Darve, Université Grenoble-Alpes**

**DAY 1:**

- 8:30 – 9:00** Introduction to the School  
Félix DARVE (Université Grenoble-Alpes)
- 9:00 – 10:00** Overview of Machine Learning  
Ioannis STEFANO (EC-Nantes)
- 10:00 – 10:30** **COFFEE BREAK**
- 10:30 – 12:00** Introduction to regression methods – Theory  
Filippo MASI (University of Sydney)
- 12:00 – 13:30** **LUNCH**
- 13:30 – 15:00** Hands-on introduction to regression methods  
Filippo MASI (University of Sydney)
- 15:00 – 15:30** **COFFEE BREAK**
- 15:30 – 16:30** Unsupervised topological learning  
Noël JAKSE (Université Grenoble-Alpes)
- 16:30 – 17:45** Introduction to classification methods  
Noël JAKSE (Université Grenoble-Alpes)
- 17:45 – 19:00** “Data-Driven” modeling of geomaterials  
Konstantinos KARAPIPERIS (ETH Zurich)
- 20:00** **DINNER**



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**34<sup>th</sup> ALERT Doctoral School**

**Aussois, 29<sup>th</sup> September 2023**

## **Machine Learning (ML) in Geomechanics**

**Coordinators:**

**Prof. Ioannis Stefanou, EC-Nantes**

**Prof. Félix Darve, Université Grenoble-Alpes**

**DAY 2:**

**8:30 – 10:30** Non-Euclidean machine learning for multiscale geomechanics  
WaiChing SUN (Columbia University)

**10:30 – 11:00** **COFFEE BREAK**

**11:00 – 12:00** Introduction to Artificial Neural Networks  
Filippo GATTI (ENS Paris-Saclay)

**12:00 – 13:30** **LUNCH**

**13:30 – 15:30** Hands-on introduction to Artificial Neural Networks Part I  
Filippo GATTI (ENS Paris-Saclay)

**15:30 – 16:00** **COFFEE BREAK**

**16:00 – 17:00** Hands-on introduction to Artificial Neural Networks Part II  
Filippo GATTI (ENS Paris-Saclay)

**17:00 – 19:00** Hands-on Physics and Thermodynamics based Artificial Neural Networks  
Filippo MASI (University of Sydney) & Ioannis STEFANO (EC-Nantes)

**20:00** **DINNER**



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**34<sup>th</sup> ALERT Doctoral School**

**Aussois, 30<sup>th</sup> September 2023**

## **Machine Learning (ML) in Geomechanics**

**Coordinators:**

**Prof. Ioannis Stefanou, EC-Nantes**

**Prof. Félix Darve, Université Grenoble-Alpes**

**DAY 3:**

**8:30 – 10:00** Introduction to Reinforcement learning  
Alexandros STATHAS (EC-Nantes), Diego GUTIERREZ-ORIBIO (EC-Nantes) & Ioannis STEFANOUE (EC-Nantes)

**10:00 – 10:30 COFFEE BREAK**

**10:30 – 12:00** Hands-on Introduction to Reinforcement learning  
Diego GUTIERREZ-ORIBIO (EC-Nantes), Alexandros STATHAS (EC-Nantes) & Ioannis STEFANOUE (EC-Nantes)

**12:00 – 12:30** Closure of the school  
Felix DARVE (Université Grenoble-Alpes) & Ioannis STEFANOUE (EC-Nantes)

**12:30 – 14:00 LUNCH**