MEGA.Seminar

EPFL
ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

MEchanics GAthering Seminar Series

The MEGA.Seminar is a weekly informal seminar series with a focus on the local Mechanics community. Our goal is to enhance interactions, facilitate exchanges, and catalyze collaborations. The speakers' epicenter is on EPFL's postdocs and senior graduate students.

Unified modeling of snow and avalanche mechanics using the MPM

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Abstract

Snow slab avalanches start with the failure of a weak snow layer buried below a cohesive snow slab. After failure, the very porous character of the weak layer leads to its volumetric collapse and, thus, closing of crack faces due to the weight of the overlaying slab. This complex process, generally referred to as anticrack, explains why avalanches can be remotely triggered from flat terrain.
On the basis of a new elastoplasticity model for porous cohesive materials and the Material Point Method (MPM), we accurately reproduce the propagation dynamics of anticracks observed in snow fracture experiments as well as the subsequent detachment of the slab and the flow of the avalanche. In particular, we performed 3D slope scale simulations of both the release and flow of slab avalanches triggered either directly or remotely.

Thursday, April 12th 2018

4:15- 5:15pm
Palaz room (MED 0 1418, EPFL)

Bio
Johan Gaume is a research and teaching associate in the CRYOS lab. of EPFL and scientist at the SLF in Davos. His research is focused on the numerical modeling of snow fracture and avalanche mechanics in order toimprove avalanche forecasting. Last summer, he was visiting scholar in the Department of Mathematics of UCLA.