



## Mathematics and CS Seminar

# Numerical computations and thermodynamically complete models for inelastic behaviour in solids

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Host: Julian Fischer, Erika Maringova

In this talk, I will introduce some aspects of the mathematical modelling of inelastic solids, placing particular emphasis on models that are compatible with the second law of thermodynamics. In particular, I will describe a recent model from [Cichra, Prša; 2020] and discuss its numerical approximation via the finite element method. One of the advantages of the approach considered here is that it is not necessary to introduce additional concepts, such as the plastic strain. Moreover, as a consequence of the thermodynamically consistent derivation, one is able to compute the evolution of the temperature field without additional complication. I will also showcase an application of this modelling approach to the Mullins effect, for which up to date there had been no simple yet fully coupled thermo-mechanical model. This is joint work with David Cichra, Vít Prša and Karel Tma.

**Thursday, July 27, 2023 04:15pm - 05:15pm**

Heinzel Seminar Room (I21.EG.101), Office Building West, ISTA



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