Institute of Thermomechanics Seminar
https://www.it.cas.cz/en/it-seminar-programme

Lecture No. 117

Institute of Thermomechanics, Czech Academy of Sciences

invites you to a lecture within the lecture series **Institute of Thermomechanics Seminar**

Phenomenological modelling of ductile fracture in metals using the element deletion technique

given by

Associate Prof. František Šebek

Faculty of Mechanical Engineering, Brno University of Technology, Czech Republic

Ductile fracture is a phenomenon that occurs in metallic materials in many cases, from unwanted situations in the automotive industry to the desired output of manufacturing processes. Its modelling is approached by various techniques, ranging from the utilization of simple criteria based on the tensile tests to the complex models covering various stress states. The crack initiation and propagation, not in a sense of classical fracture mechanics, may itself be modelled by the node separation, phase field, extended finite element or meshless methods. The current talk will focus on a utilization of the element deletion technique, within an explicit finite element method, based on the phenomenological ductile fracture criteria coupled with a non-quadratic non-prismatic yield surface with the deviatoric associated flow rule. The calibrated material model, thus in the scope of continuum damage mechanics, will be verified towards the independent fracture tests to show its predictability. Finally, a broader industrial applicability will be presented along with the remarks and prospects for future studies.

The lecture will be held on Tuesday, June 6, 2023 at 10:30 a.m.
in the building of the Institute of Thermomechanics (large lecture room),
Dolejškova 5, 182 00 Prague 8

Contact persons: Radek Kolman, Hanuš Seiner