# Computational homogenization of porous metals and analysis of local stress fields at the microscale

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Porous metals are a class of engineering materials characterized by a system of pores within a metallic matrix, enabling the achievement of unique structural and functional properties. Pores may be regarded as a functional phase that contributes to optimizing material performance [1]. This work focuses on investigating the influence of the material's microstructural features on local stress distributions, as well as on the prediction of effective properties. The considered factors include the pore volume fraction, as well as their shape and spatial distribution. Digital models of the microstructures accounting for these factors have been generated. The finite element method is employed to compute strain and stress fields within these models, followed by computational homogenization [2]. During the conference, the obtained effective elastic constants and stress distributions will be presented and discussed, along with remarks on modelling in the elastic–plastic regime.

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