V úterý 26.3. v 15:40 hod. se v seminární místnosti KPMS koná přednáška

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Stochastic 3D microstructure modeling of twinned polycrystalline materials

Abstract:
A stochastic 3D microstructure model for polycrystals is introduced which incorporates two types of twin grains, namely neighboring and inclusion twins. These two types of twins are not distinguishable with respect to their crystallographic properties, whereas they differ in their grain morphology. They mimic the presence of crystal twins in polycrystalline microstructures as observed by 3D imaging techniques in e.g. γ-TiAl. The polycrystal grain morphology is modeled by means of Laguerre tessellations. The crystallographic orientation of each grain is either sampled uniformly on the space of orientations or chosen to be in a twinning relation with another grain. This model can be utilized to quantitatively study relationships between morphology and mechanical properties of polycrystalline materials. For this purpose, full-field Fourier-based computations are performed to investigate the effect of twinning on the overall elastic response.