

RECENT ADVANCES IN FFT-BASED MICROMECHANICAL MODELING OF POLYCRYSTALLINE MATERIALS

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Emerging characterization methods in experimental mechanics [1] pose a challenge to modelers to devise efficient formulations to interpret and exploit the massive amount of data generated by these novel techniques. In this talk we report recent advances in Fast Fourier Transform-based micromechanical modelling [2], which can use direct input from voxelized microstructural images of polycrystalline aggregates to predict their local and effective response [3]. New FFT-based algorithms for complex constitutive behaviors of plastically deforming materials, including elasto-viscoplasticity [4], dilatational plasticity [5] and non-local plasticity [6] will be highlighted.

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