Jon Gordon

A material model is created to further understanding of micro-mechanical effects at high strain rates for HCP metals such as Titanium; this is of interest to the aviation industry.

A compressible Neo-Hookean model is used to describe the elastic behaviour and is coupled with a viscoplastic model to provide a hyperelastic-viscoplastic explicit stress update routine. The Critical Resolved Shear Stress (CRSS) of each slip family can be set independently.

Three dimensional polycrystalline Representative Volume Elements (RVE’s) are created. The grain geometry is created from statistical data which is provided form EBSD analysis.

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