Measuring the timescale of plastic deformation in laser compressed highly textured Ta samples via X-ray diffraction

When a material is uniaxially shock or ramp compressed beyond its yield strength, it deforms plastically to relieve the large applied shear stresses. *In situ* X-ray diffraction experiments by Milathianaki *et al.* investigating copper measured the timescale on which this relaxation occurs, finding a plastic strain rate of $10^{9}s^{-1}$. We perform similar measurements on tantalum, a model BCC material, using a tilted target geometry that allows for the direct. measurement of longitudinal and transverse strains.