Continuum Elastoplasticity - Finite Strain

Bending example

Domain: $10 \times 1 \times 1$
Mesh: $80 \times 8 \times 8$.
Boundary conditions: $\boldsymbol{u} = 0$ at $x_1 = 0$; $\boldsymbol{u} = -0.1\boldsymbol{e}_3$ at $x_1 = 10$.

Parameter	Value
Lamé constant λ	100.6582e9
Lamé constant μ	45.6473e9
Yield stress	33.014025e6
Linear hardening coefficient	2.0259e9
Basis function order	1
Quadrature order	2
Pseudo-time steps	100

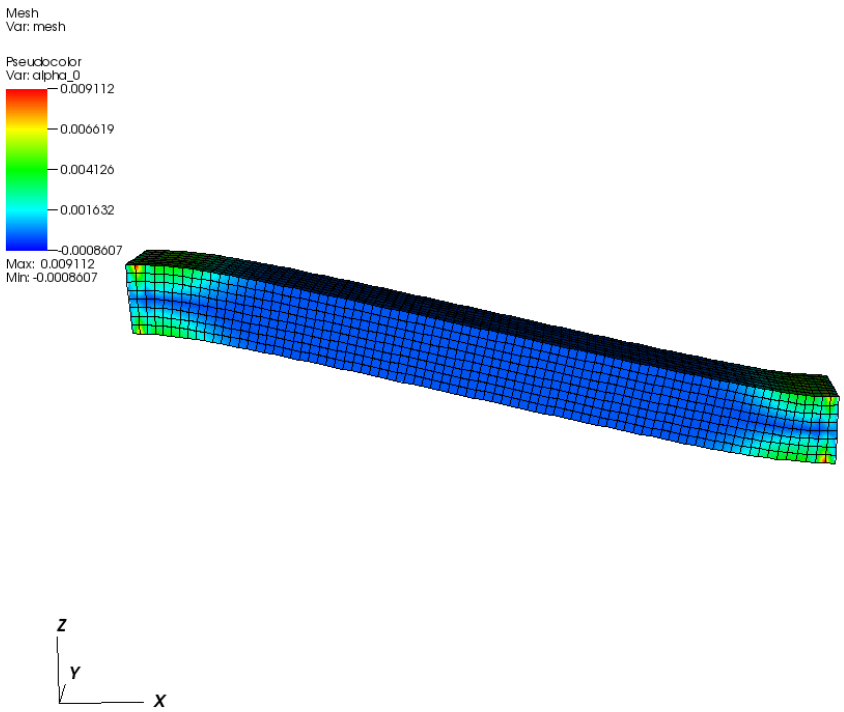

Figure 1: Plot of equivalent plastic strain, α. Deformation scaled by $20\times$.

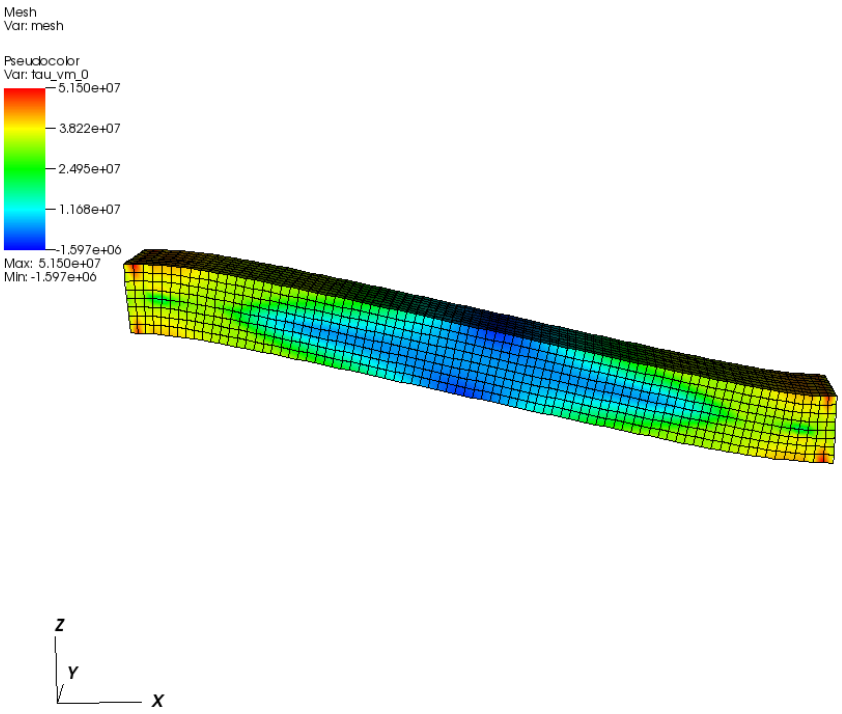

Figure 2: Plot of von Mises stress. Deformation scaled by 20×.

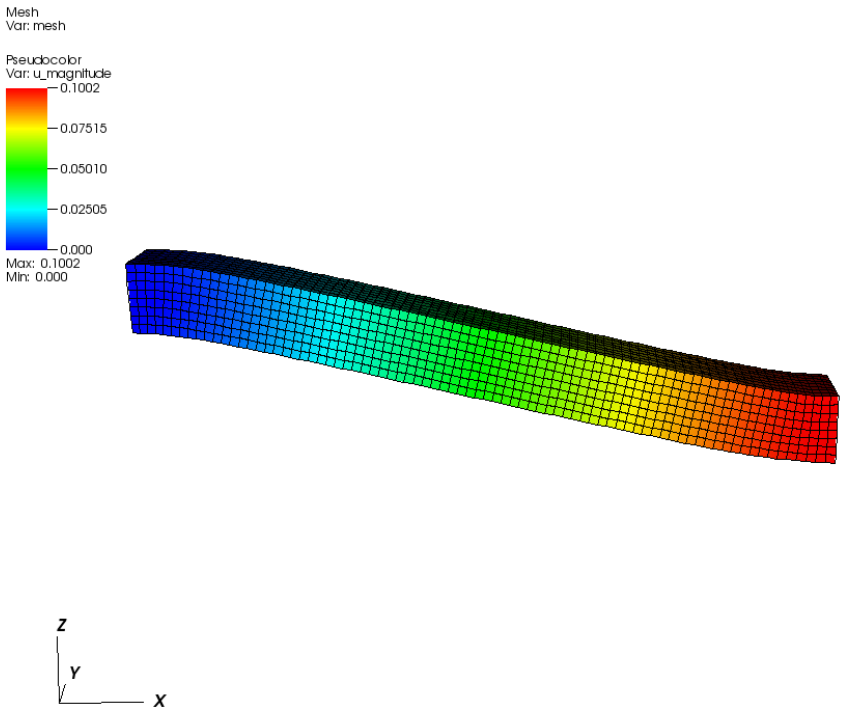

Figure 3: Plot of displacement magnitude. Deformation scaled by 20×.