

PRISMS-Plasticity

Continuum Elastoplasticity

Constrained tension example

Domain: $5 \times 1 \times 1$

Mesh: $420 \times 8 \times 8$ (non-uniform spacing)

Boundary conditions: $\mathbf{u} = 0$ at $x_1 = 0$; $u_1 = 0.1$ at $x_1 = 5$

Parameter	Value
Lamé constant λ	100.6582e9
Lamé constant μ	45.6473e9
Yield stress	33.014025e6
Linear hardening coefficient	100
Basis function order	1
Quadrature order	2
Pseudo-time steps	400

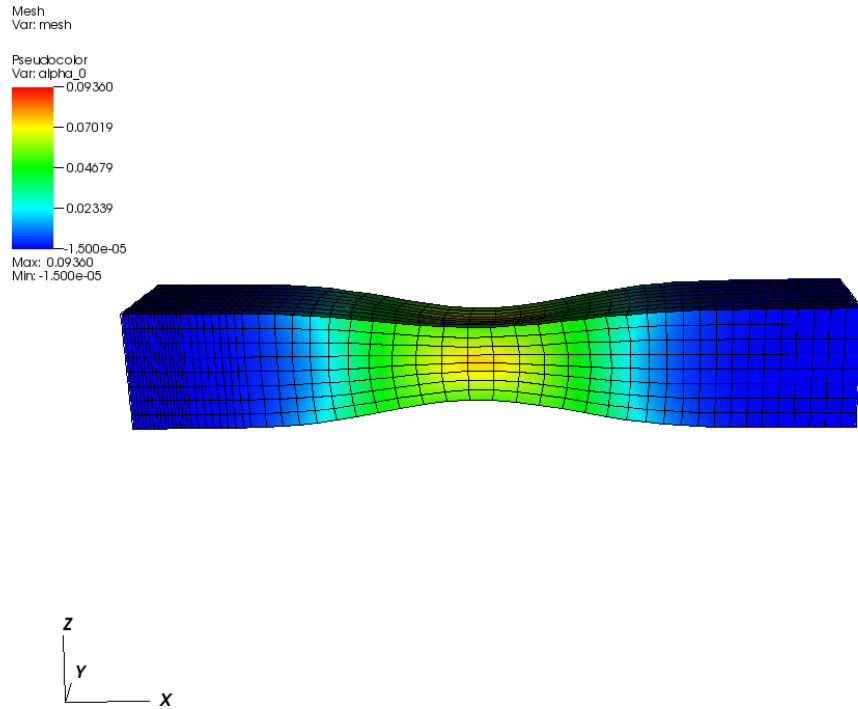


Figure 1: Plot of equivalent plastic strain, α . Deformation scaled by $10\times$.

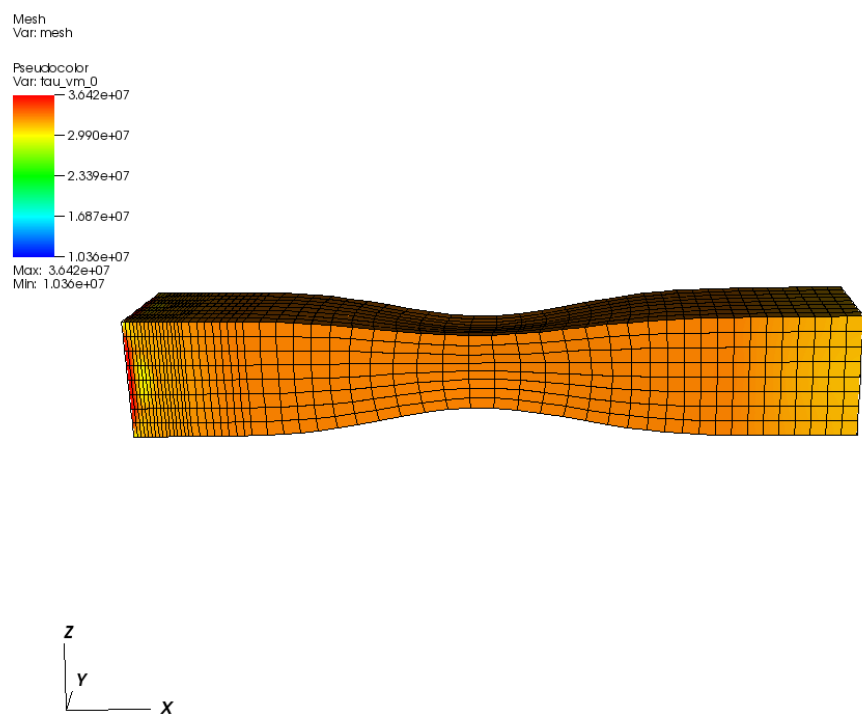


Figure 2: Plot of von Mises stress. Deformation scaled by $10\times$.

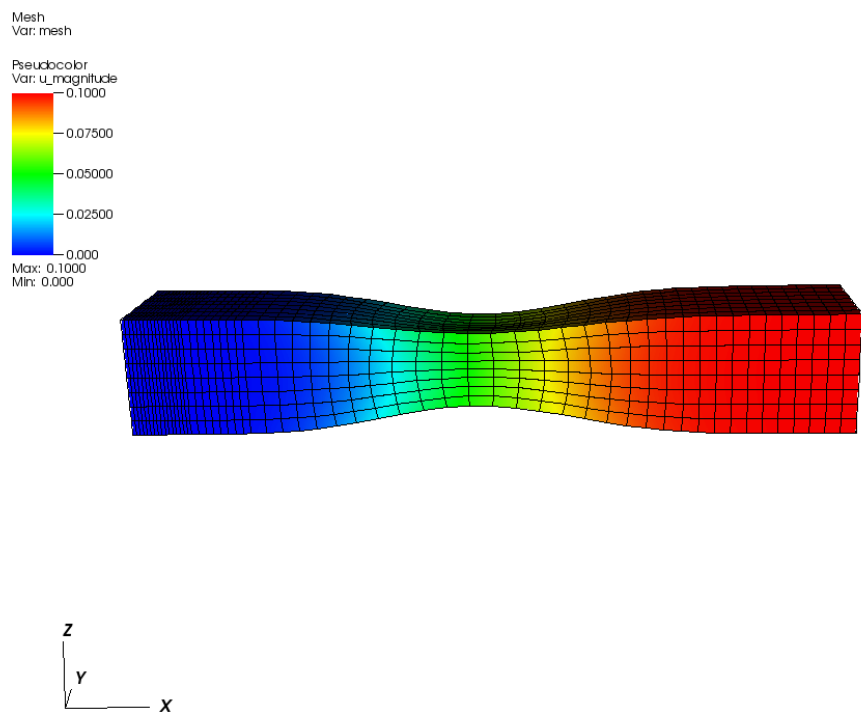


Figure 3: Plot of displacement magnitude. Deformation scaled by $10\times$.

Domain: $5 \times 1 \times 1$

Mesh: $420 \times 8 \times 8$ (non-uniform spacing)

Boundary conditions: $\mathbf{u} = 0$ at $x_1 = 0$; $u_1 = 0.5$ at $x_1 = 5$

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	200

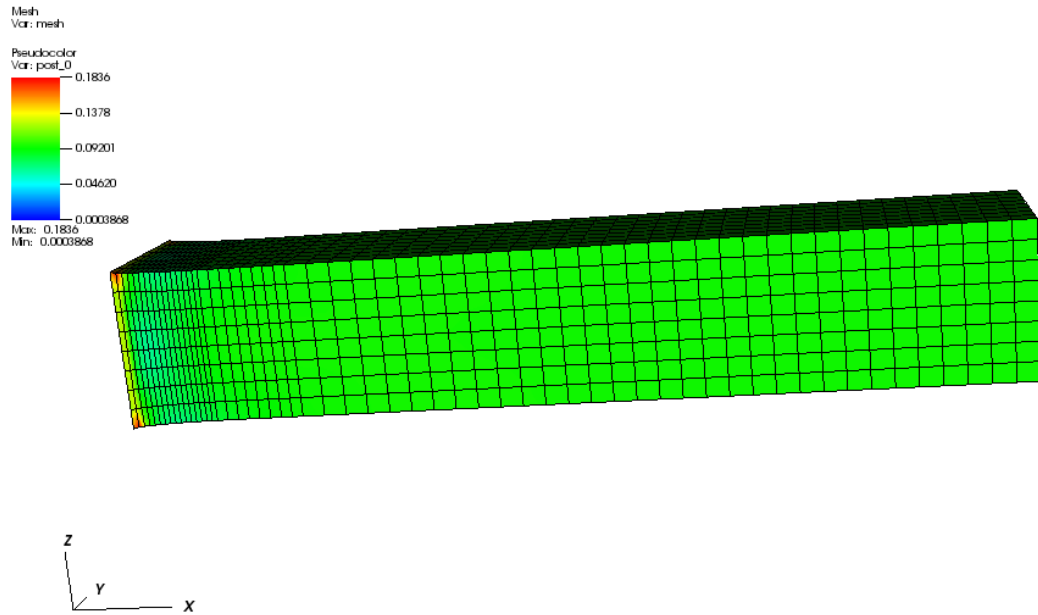


Figure 4: Deformation scaled by $1 \times$.