

Numerical experiment 3

Material parameters:

Os: Young's modulus $E = 1,71 \times 10^{10}[\text{Pa}]$ and Poisson's ratio $\nu = 0,25$.

1 Ti6Al4V: Young's modulus $E = 1,15 \times 10^{11}[\text{Pa}]$ and Poisson's ratio $\nu = 0,3$.

2 Chirulen: Young's modulus $E = 3,4 \times 10^8[\text{Pa}]$ and Poisson's ratio $\nu = 0,4$.

3 CoCrMo: Young's modulus $E = 2,08 \times 10^{11}[\text{Pa}]$ and Poisson's ratio $\nu = 0,3$.

Boundary conditions:

Prescribed zero displacement on 1-2, 3-4

Pressure $0,215 \times 10^7[\text{Pa}]$ on 5-6.

Unilateral contact boundary: 7-8, 9-10 and 11-12.

Discretization statistics:

13 subdomains, 3780 nodes, 7208 elements,

31+31+15 unilateral contact conditions, 350 interface elements.

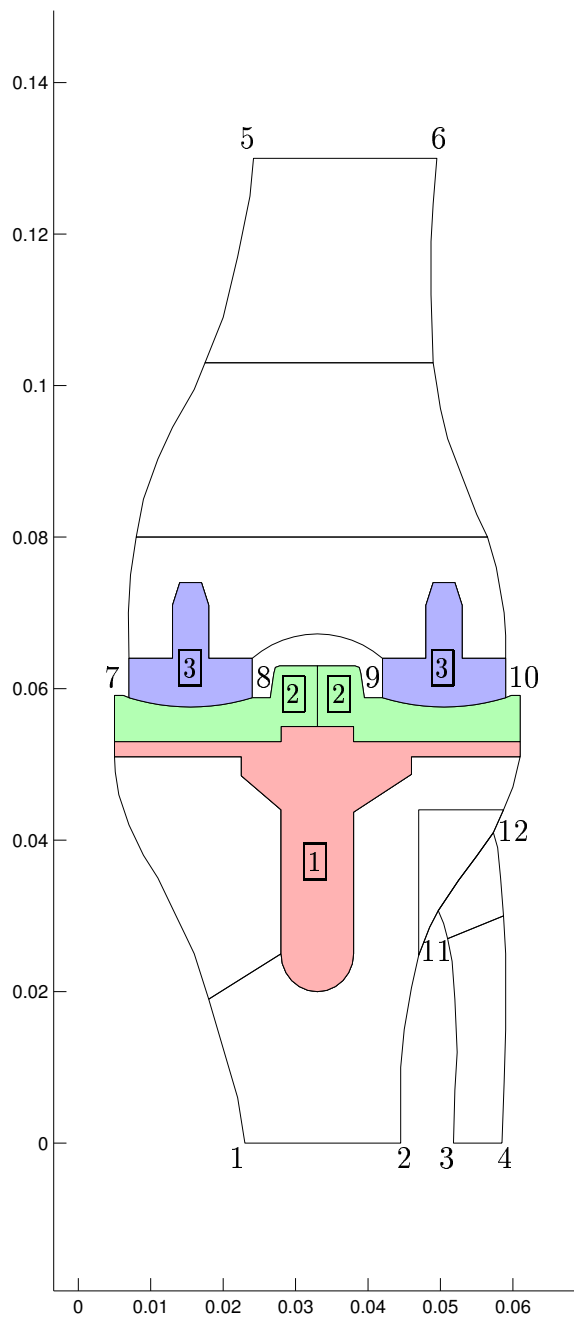


Figure 19: Geometry

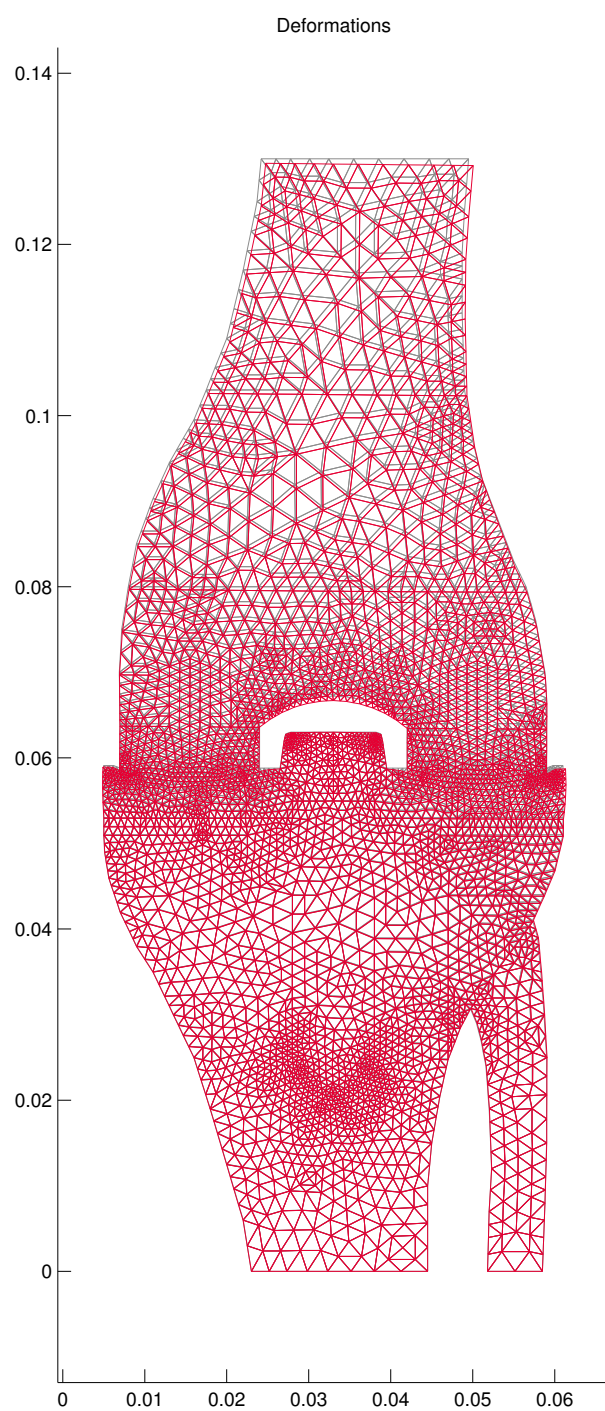


Figure 20: Deformations (enlarge factor=20)

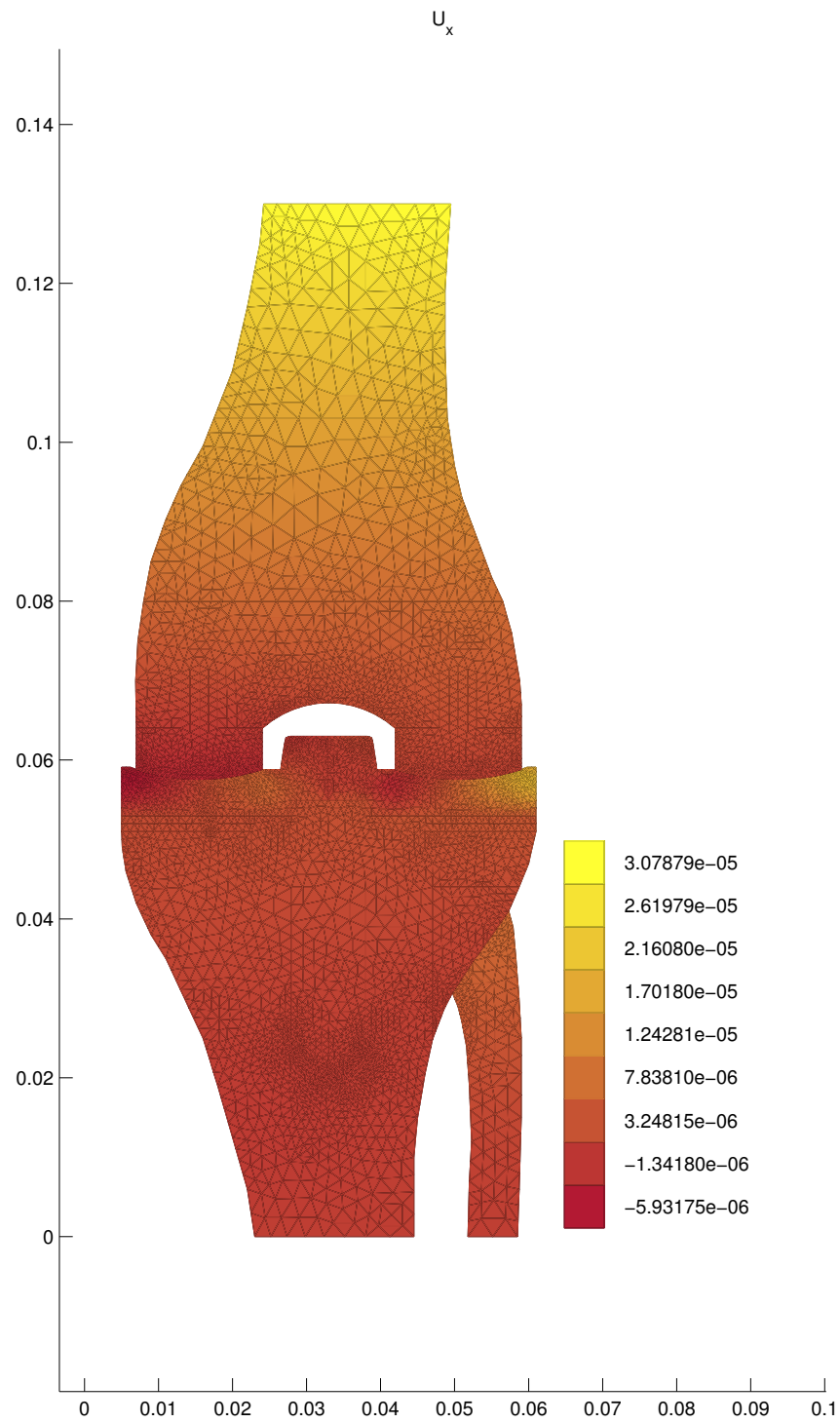


Figure 21: Horizontal component of displacement

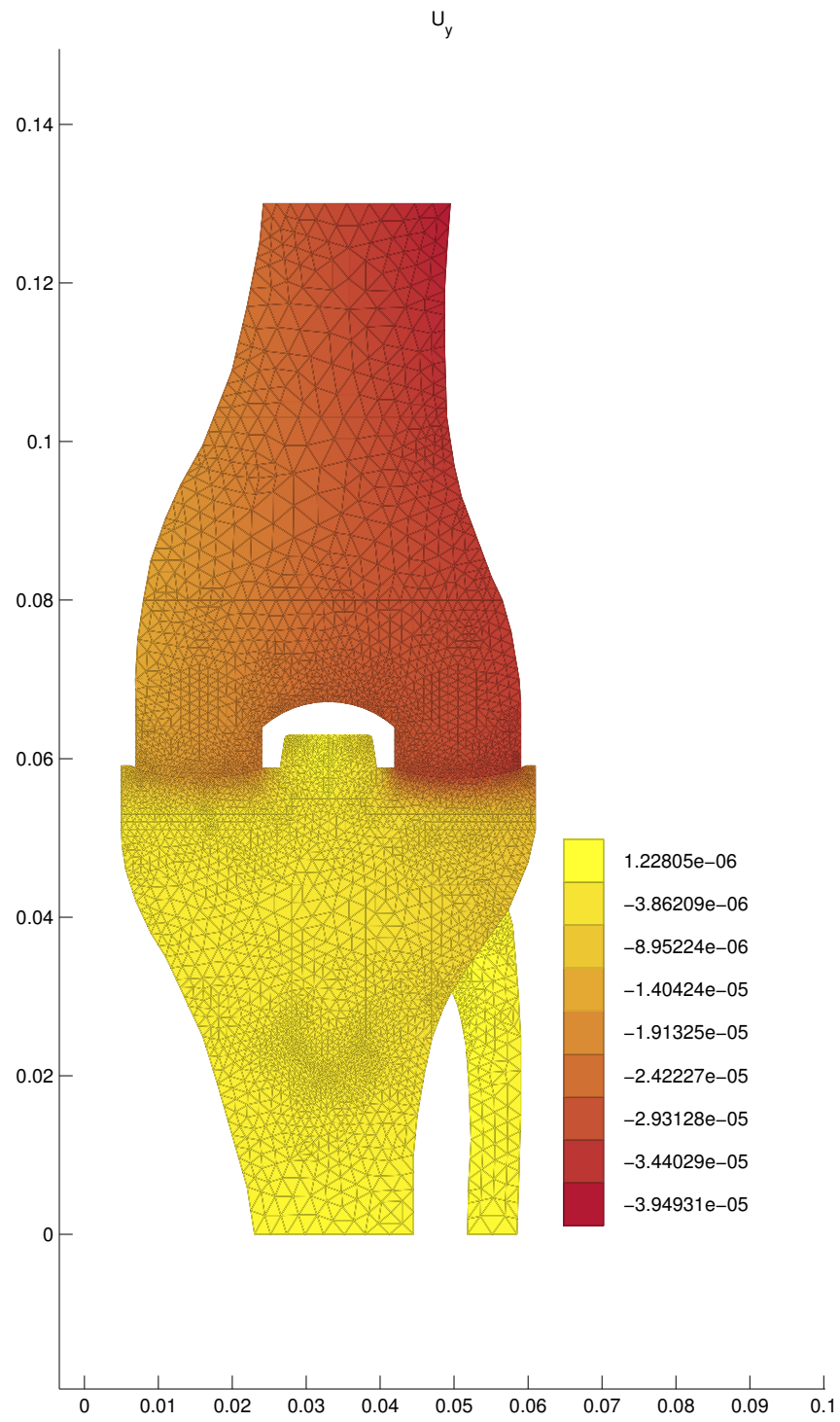


Figure 22: Vertical component of displacement

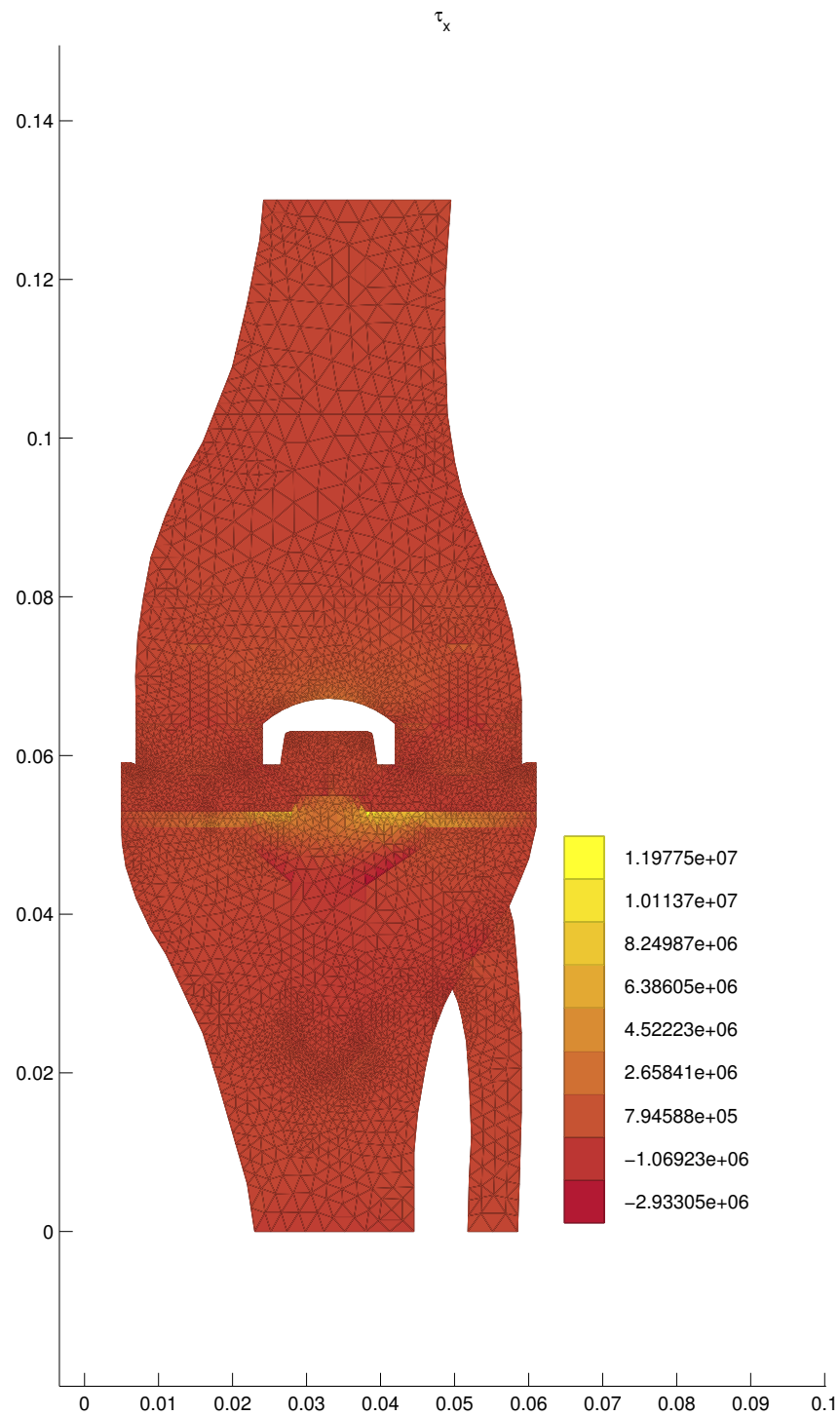


Figure 23: Stresses τ_x

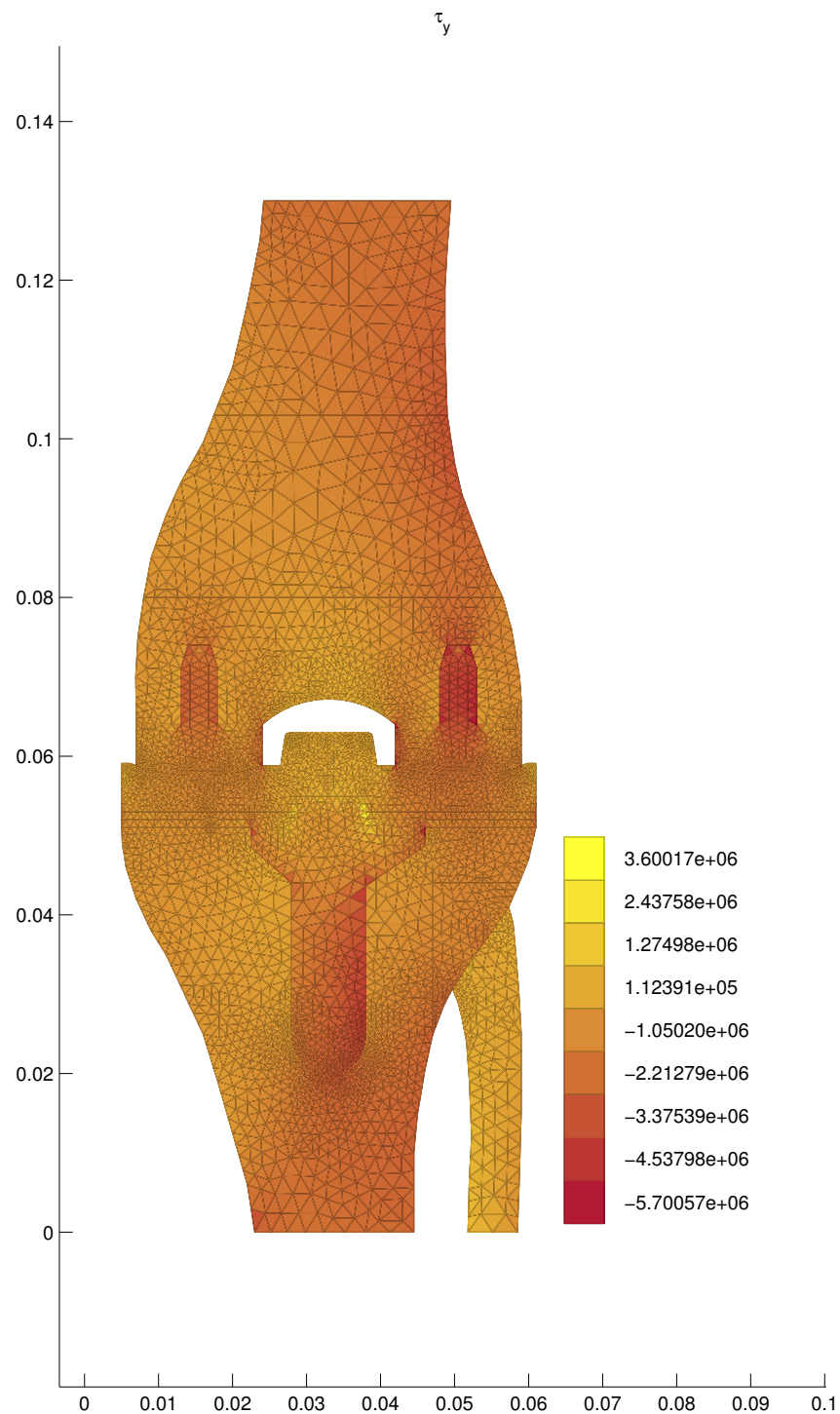


Figure 24: Stresses τ_y

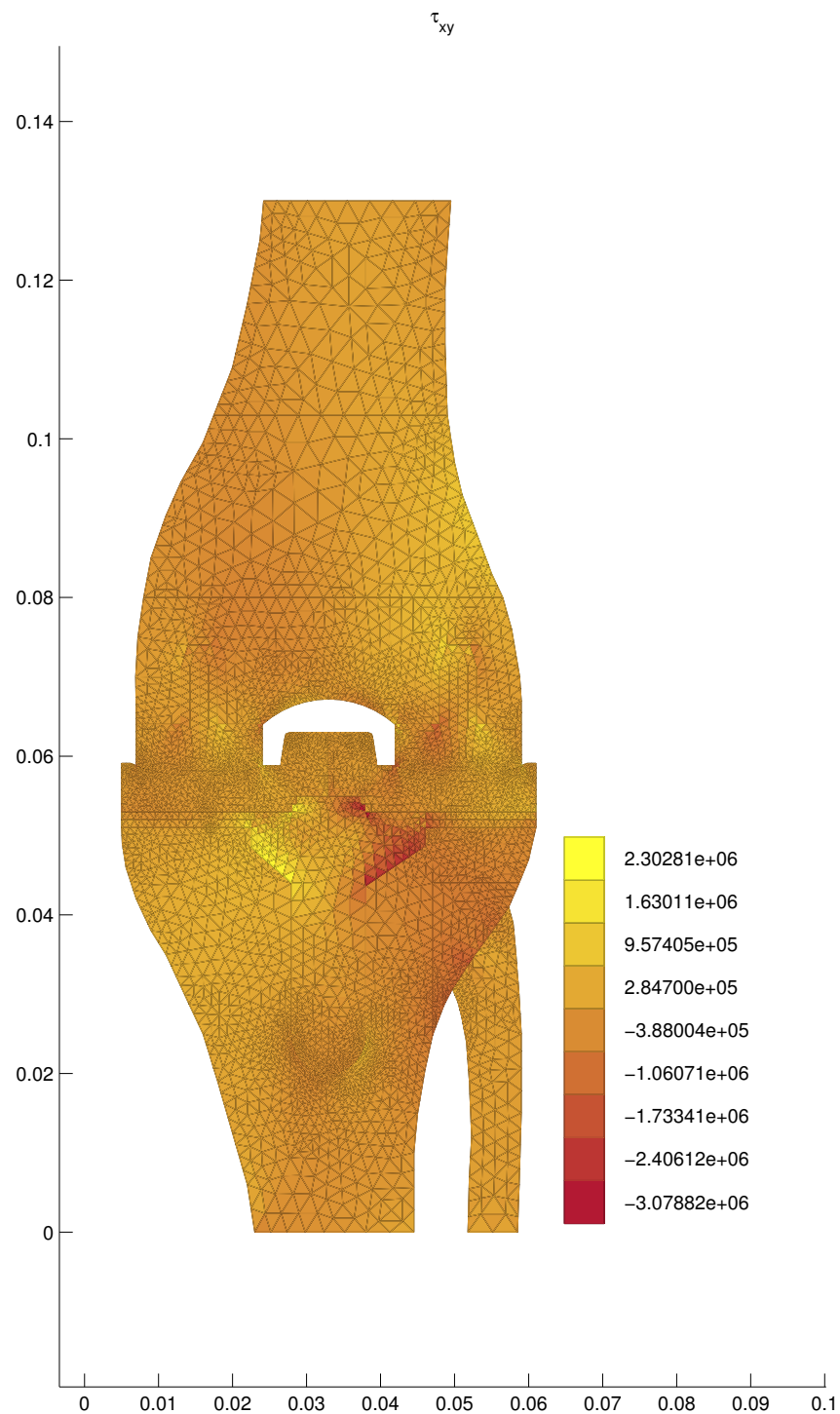


Figure 25: Stresses τ_{xy}

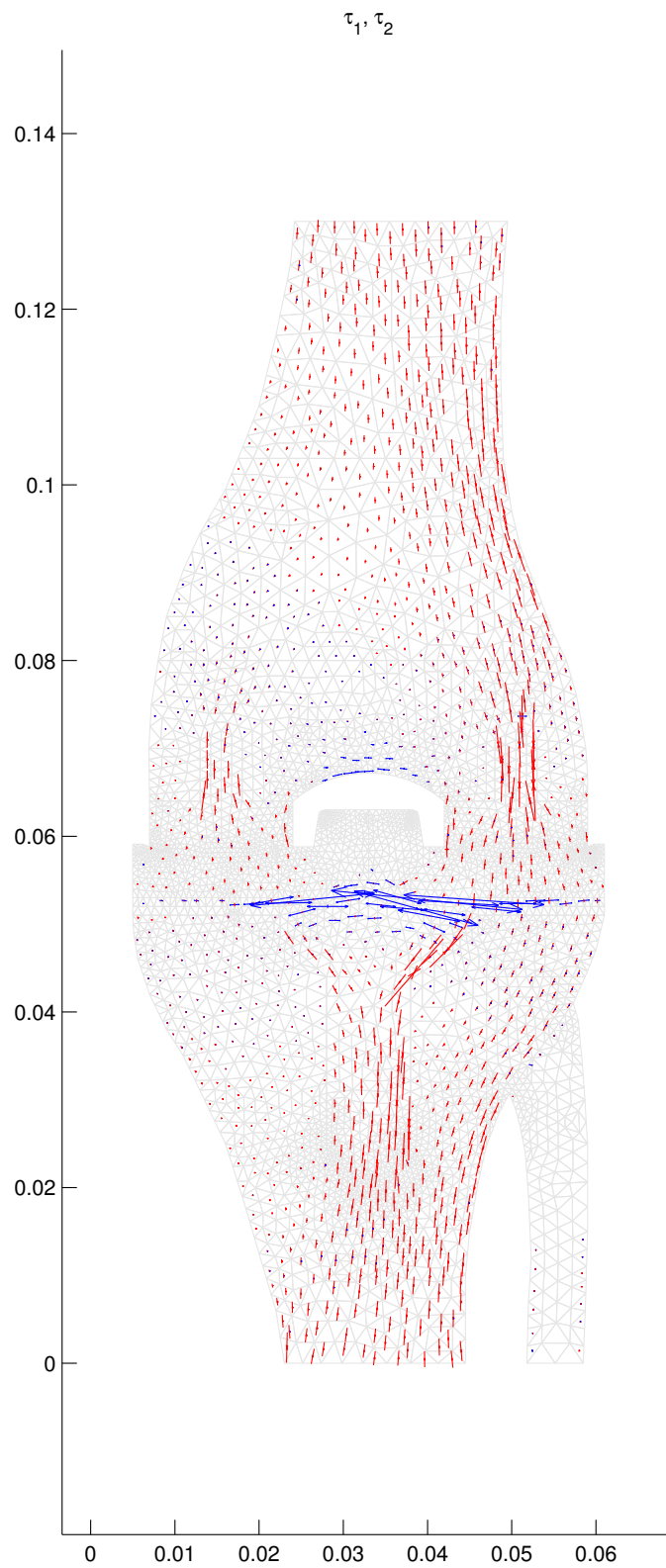


Figure 26: Principal stresses.

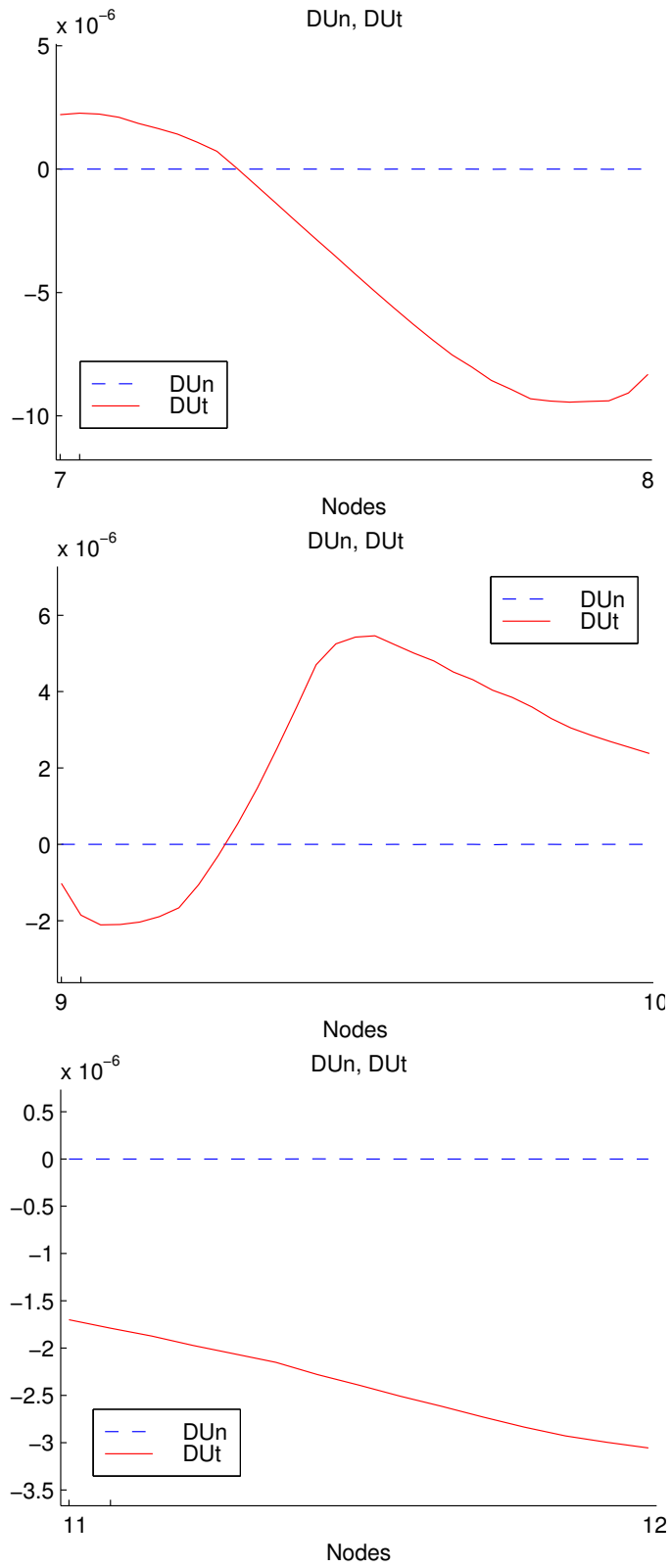


Figure 27: A normal and tangential components of displacement on contact boundary.

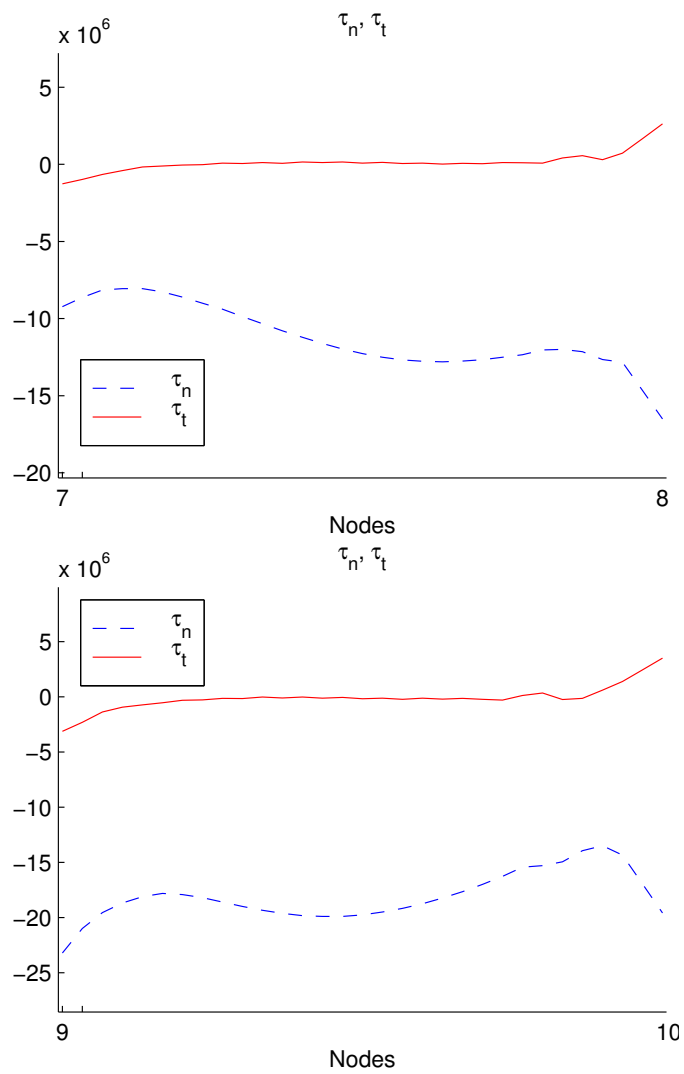


Figure 28: A normal and tangential components of stress on contact boundary.