

Numerical experiment 6

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 ZrO₂: Young's modulus $E = 4 \times 10^{11}[\text{Pa}]$ and Poisson's ratio $\nu = 0,22$.

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 and 9-10.

Discretization statistics:

10 subdomains, 2867 nodes, 4740 elements,

33+15 unilateral contact conditions, 299 interface elements.

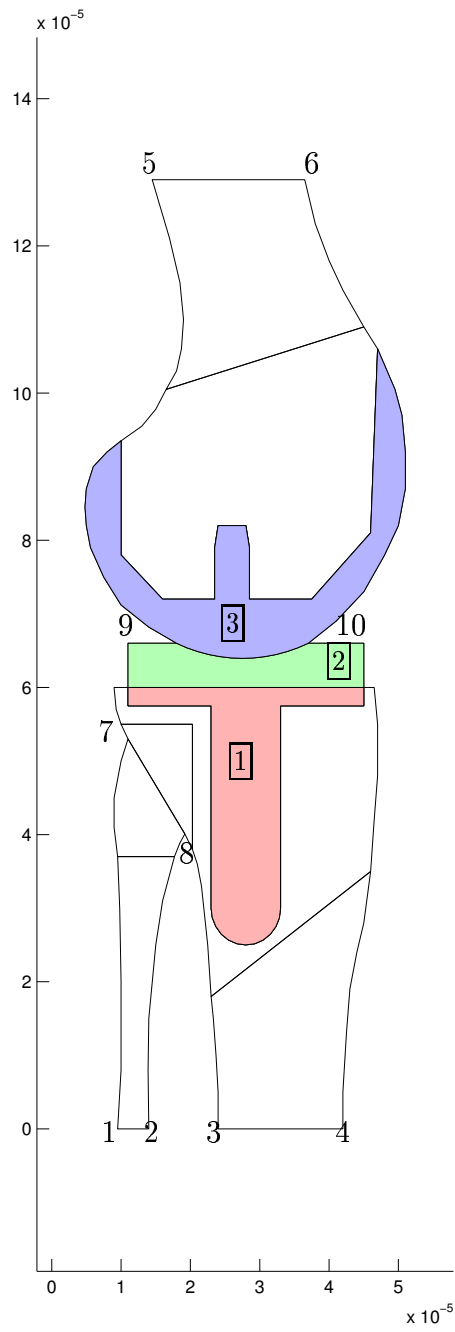


Figure 47: Geometry

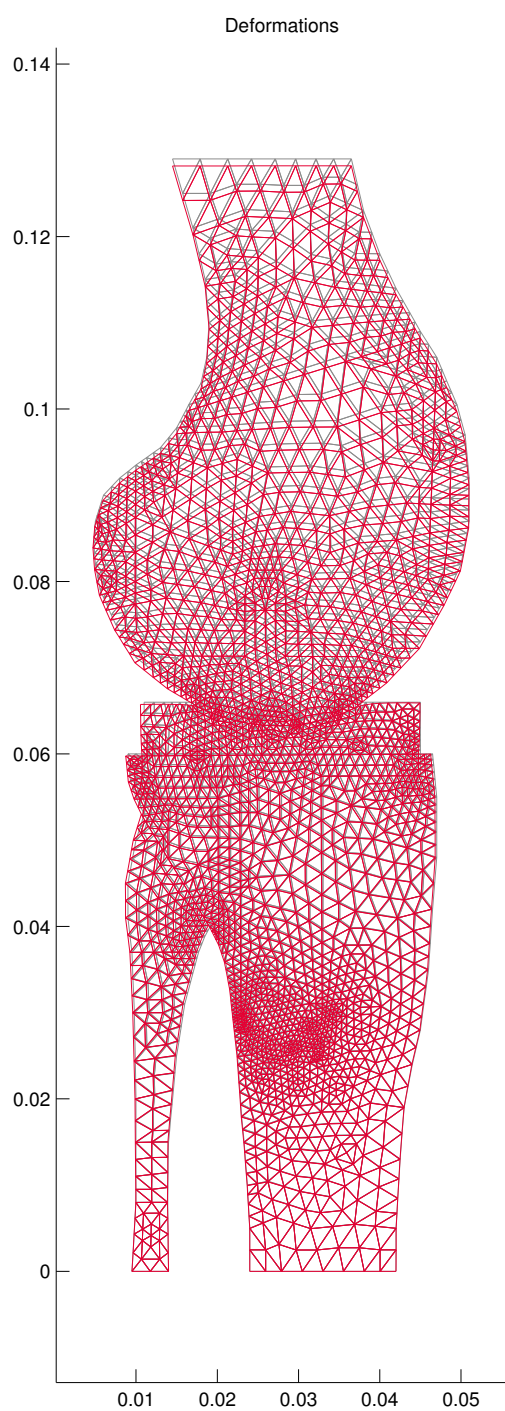


Figure 48: Deformations (enlarge factor=20)

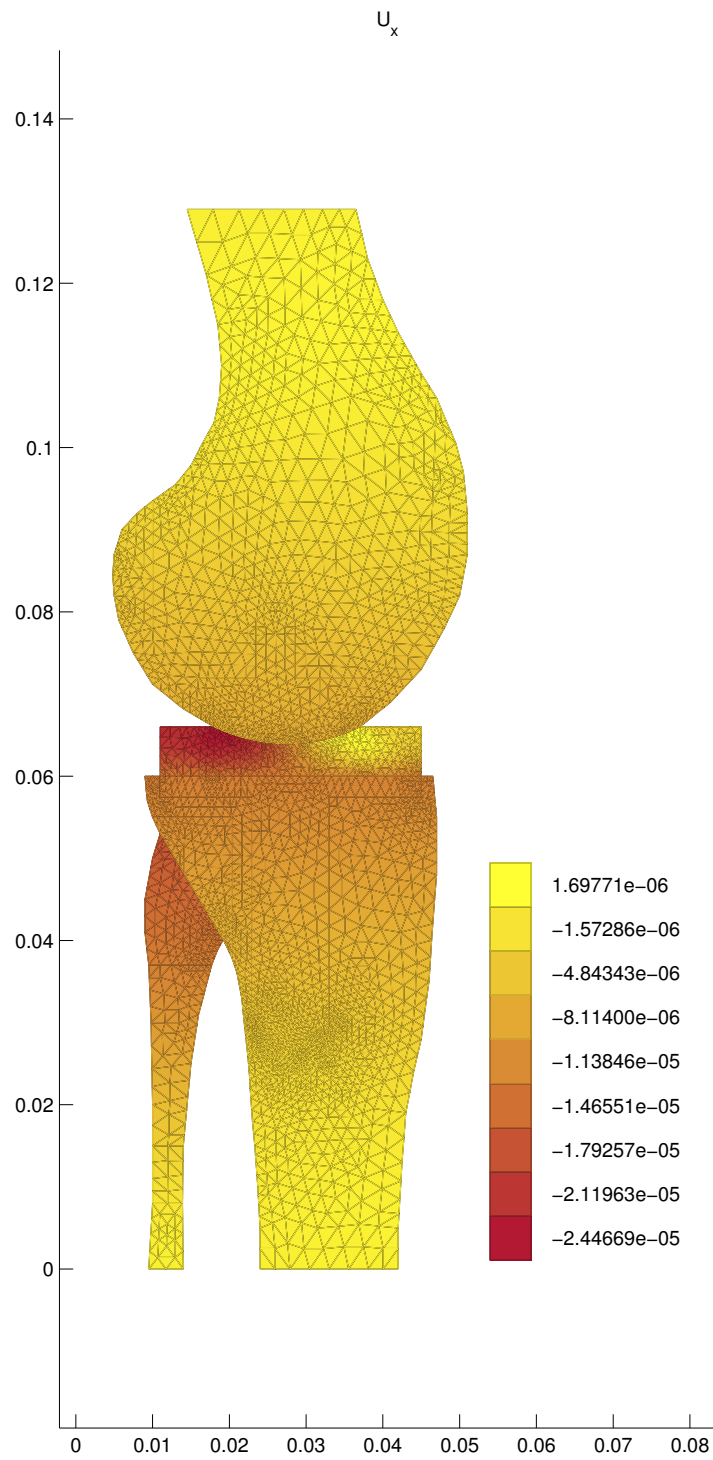


Figure 49: Horizontal component of displacement

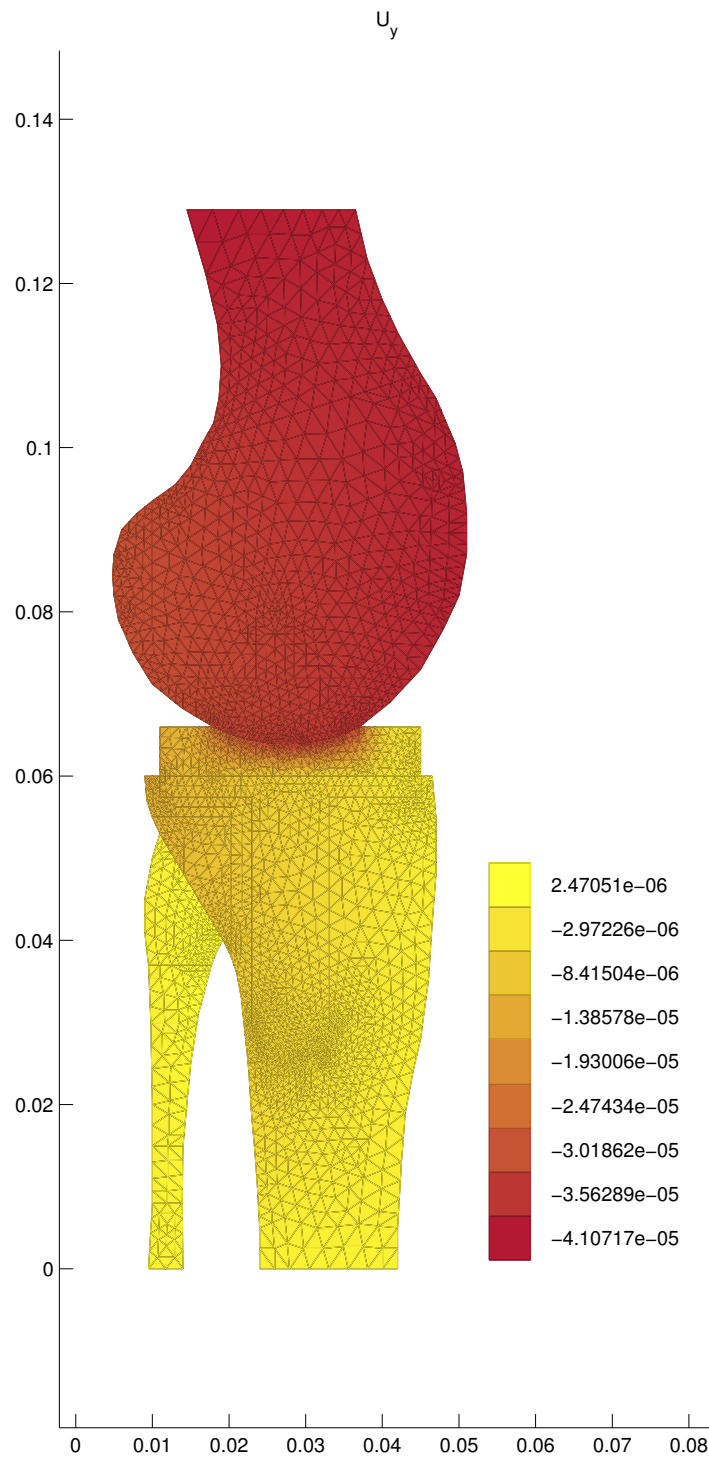


Figure 50: Vertical component of displacement

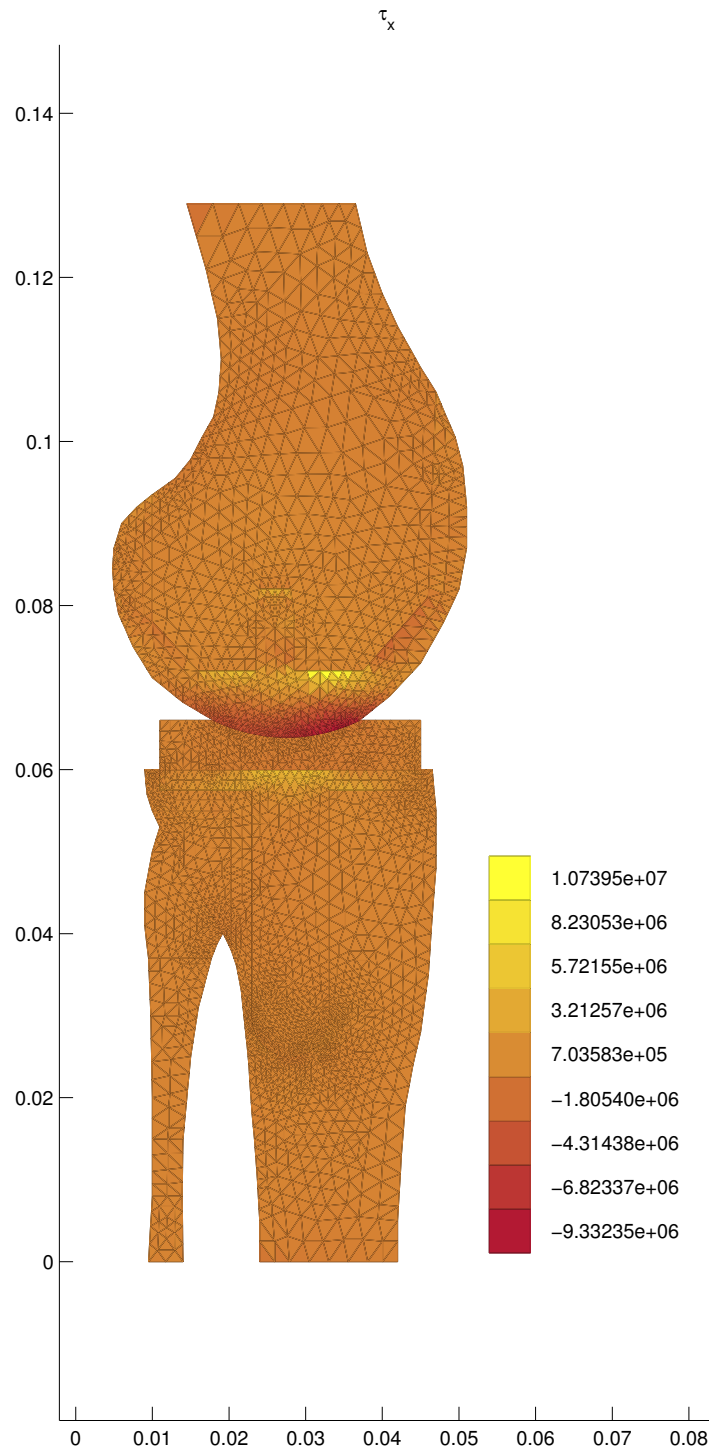


Figure 51: Stresses τ_x

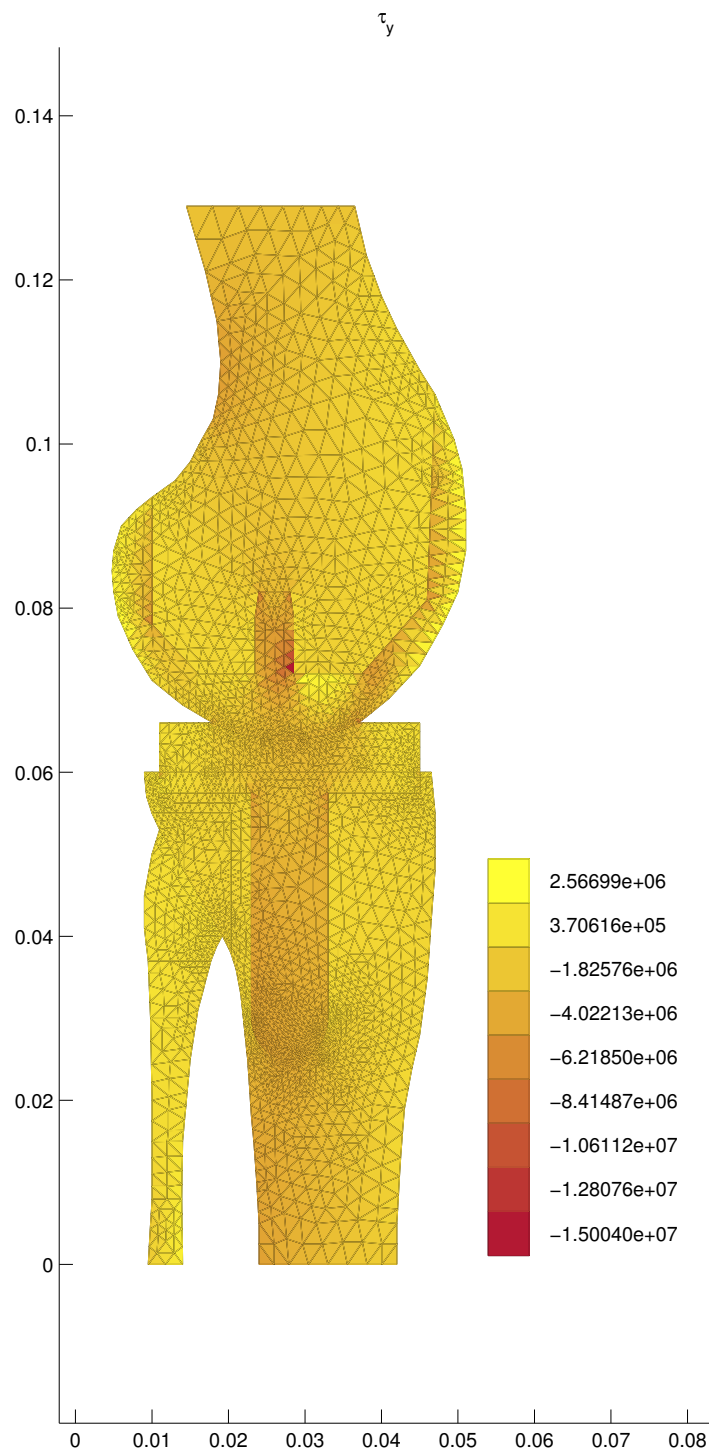


Figure 52: Stresses τ_y

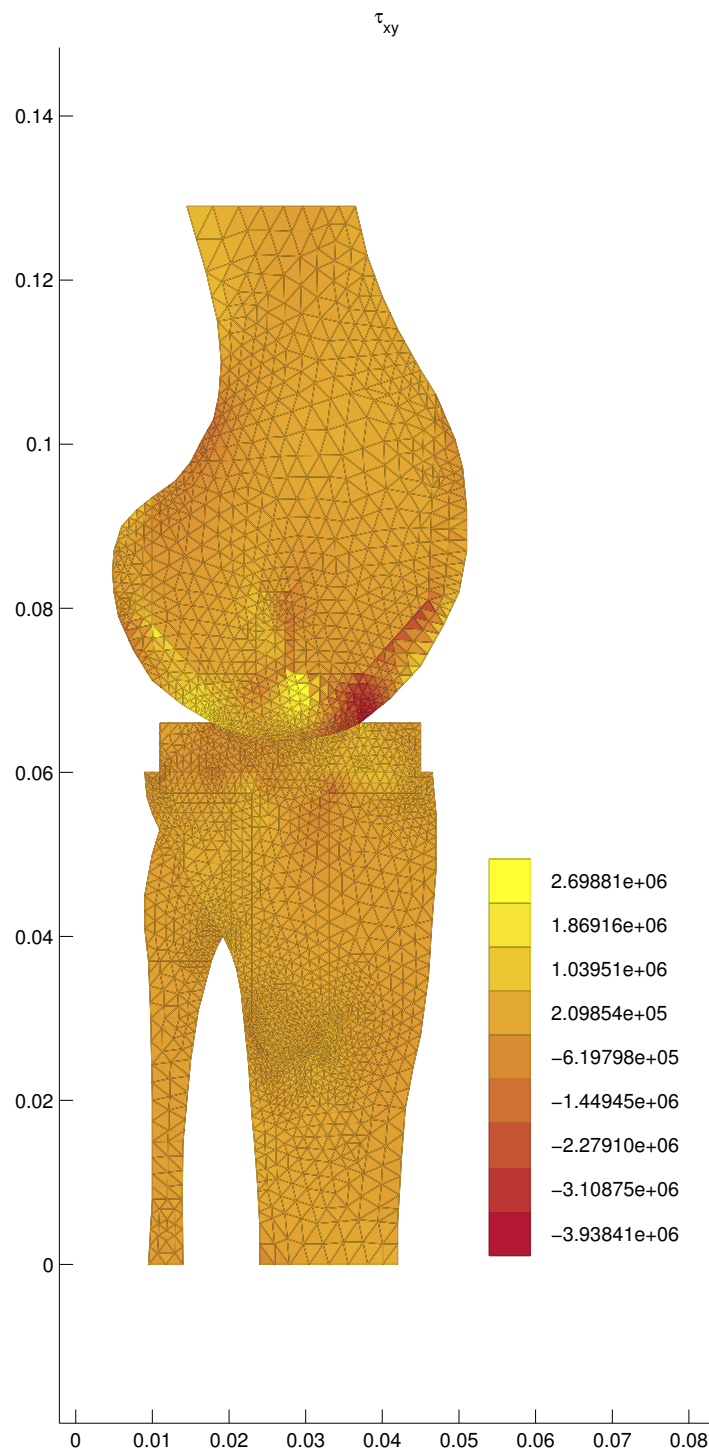


Figure 53: Stresses τ_{xy}

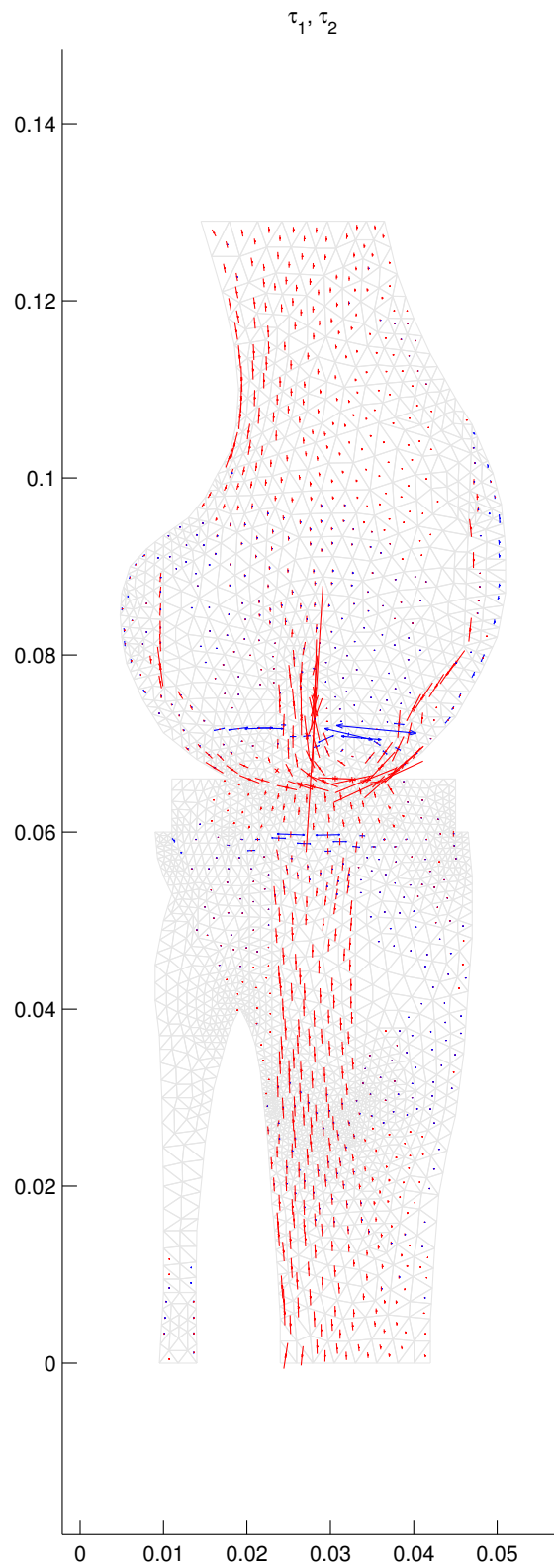


Figure 54: Principal stresses.