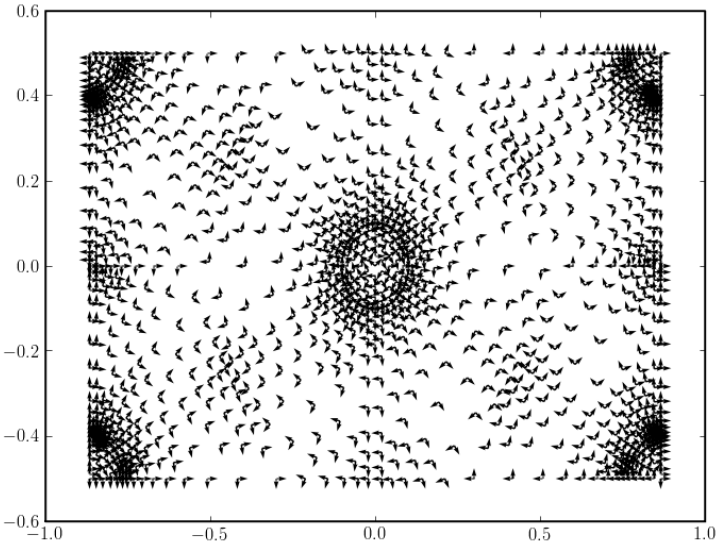
1 Micro-problem Coefficients

- anisotropic permeability K_{ij}:



1.1 Matrix

- D_{ijkl}: [[2.3 1.7 0.] [1.7 2.3 0.] [0. 0. 0.3]]
- μ: [3.8]
- μ^{-1}: [0.26315789]
- α_{ij}: [0.132 0.132 0.092]
- K_{ij}: [[[0.01 0.] [0. 0.001]]
  [[0.00101438 -0.00035942] [-0.00035942 0.00998562]]
  ..., [[0.00521131 -0.00449073] [-0.00449073 0.00578869]]
  [[0.00265013 -0.00348257] [-0.00348257 0.00834987]]]

1.2 Channels

- D_{ijkl}: [[0.23 0.17 0.] [0.17 0.23 0.] [0. 0. 0.03]]
- μ: [100.]
- μ^{-1}: [0.01]
- α_{ij}: [1. 1. 0.]
- K_{ij}: [[1. 0.] [0. 1.]]

2 Homogenized Coefficients

2.1 Steady coefficients

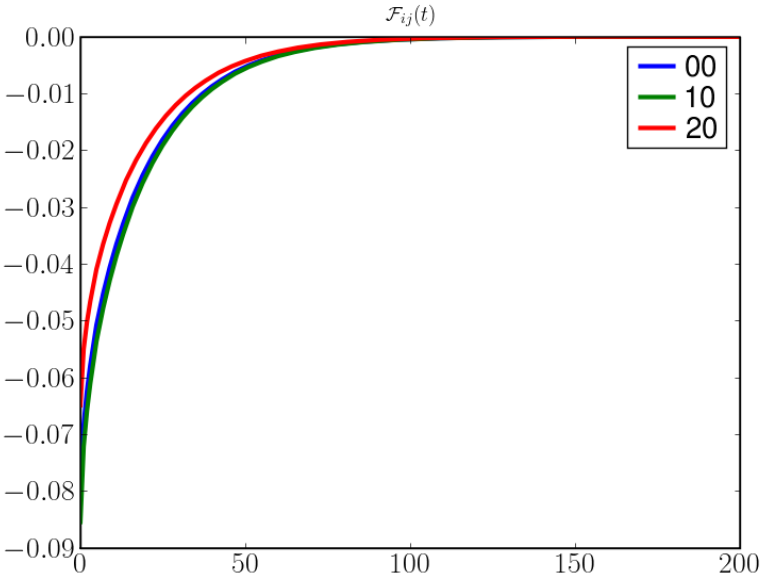
- E_{ijkl}: [[1.87440989e+00 1.30524837e+00 -4.35442578e-05] [1.30524837e+00 1.87431828e+00 -6.43057823e-06] [-4.35442578e-05 -6.43057823e-06 2.84664158e-01]]
- C_{ij}: [[1.34964528e-01 1.43188517e-06] [1.43188517e-06 1.34881785e-01]]
- $\mathcal{B}_{ij}$: [1.132376 1.13241074 0.07930384]
- $\mathcal{M}$: [0.45529815]
- volume fractions: 'Yc': array(0.14722441652250456), 'Ym': array(0.85277558347749483)
- volumeYm: 1.47700731058
- volumeYc: 0.254992689417
- volumeY: 1.732

2.2 Time-dependent coefficients at $t = 0+$

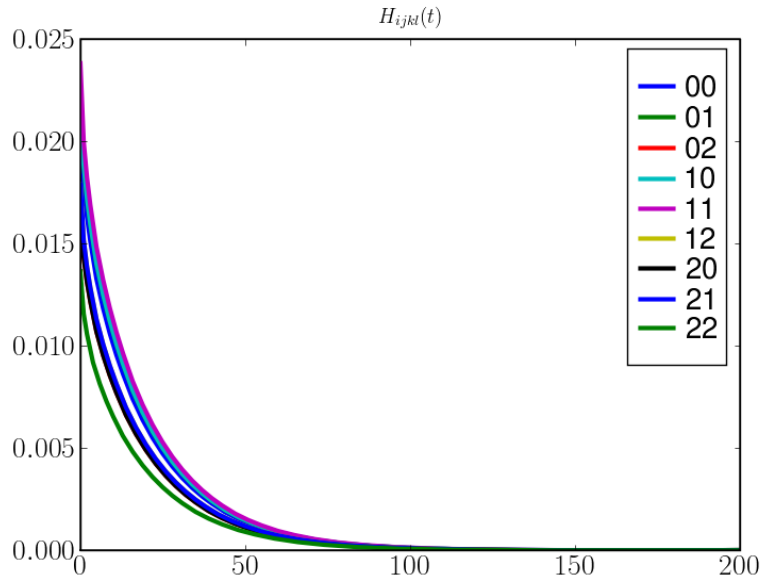
- $\mathcal{F}_{ij}(0+)$: [-0.07244143 -0.07245437 -0.06301977]
- $H_{ijkl}(0+)$: [[0.0185935 0.01851298 0.01605949] [0.01851298 0.01851896 0.01605837] [0.01605949 0.01605837 0.01398949]]
- $\mathcal{G}(0+)$: [1.4329674]

2.3 Time-dependent coefficients

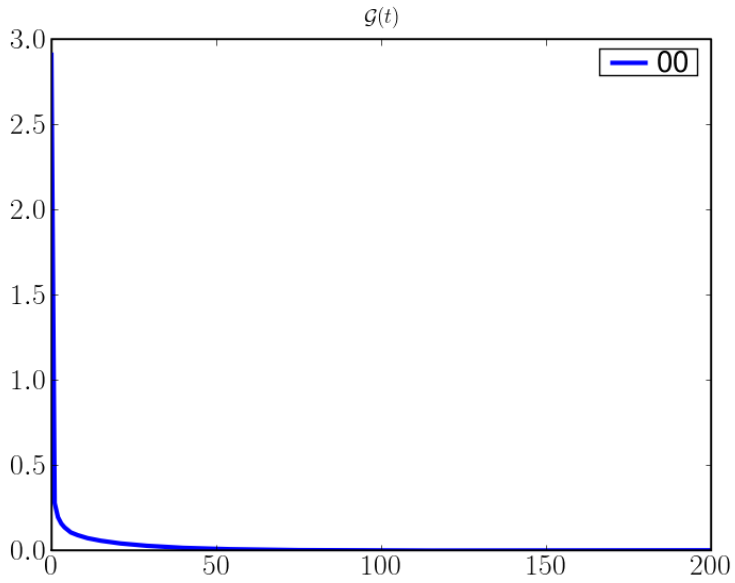
- $\mathcal{F}_{ij}(t)$



- $H_{ijkl}(t)$



- $\mathcal{G}(t)$

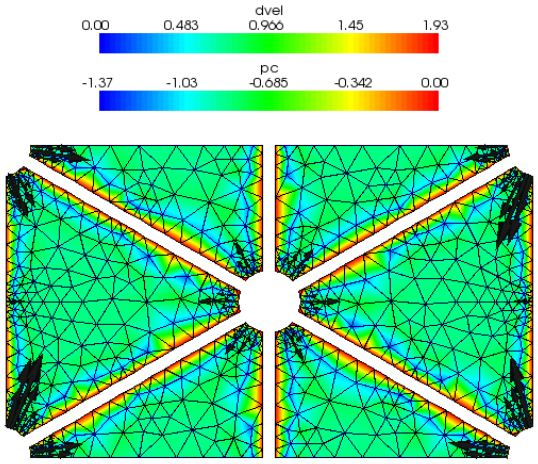


3 Correctors

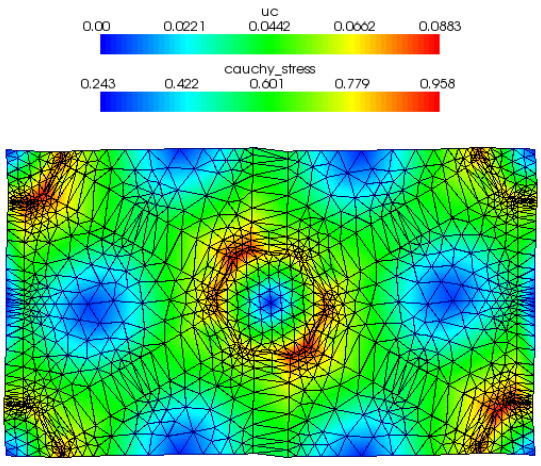
- pressure-like correctors: color = pressure, arrows = perfusion velocities (possibly scaled)
- displacements-like correctors: color = displacement, warped (possibly scaled), `cauchy_stress` colorbar only to see stress ranges

3.1 Steady-state pressure correctors

- pressure $\ldots \tilde{\pi}^P(0+)$, perfusion velocities
  scaling: 1.55e-01×

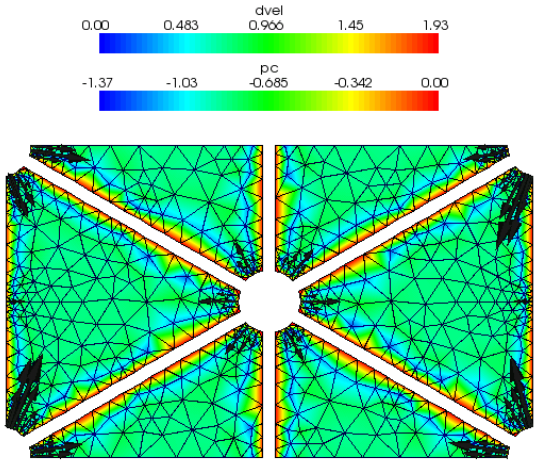


- displacements $\ldots \omega^{*,P}$
  scaling: 1.00e+00×

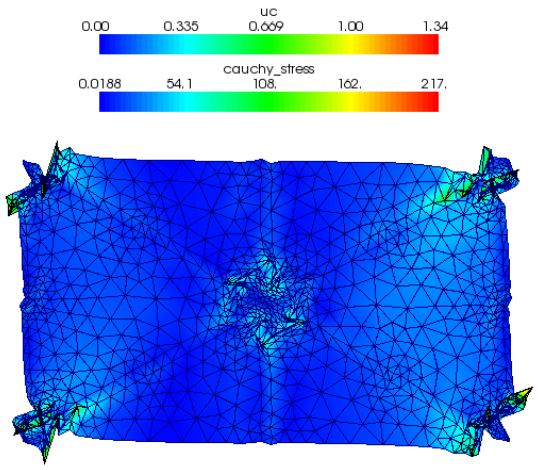


3.2 Time-dependent pressure correctors

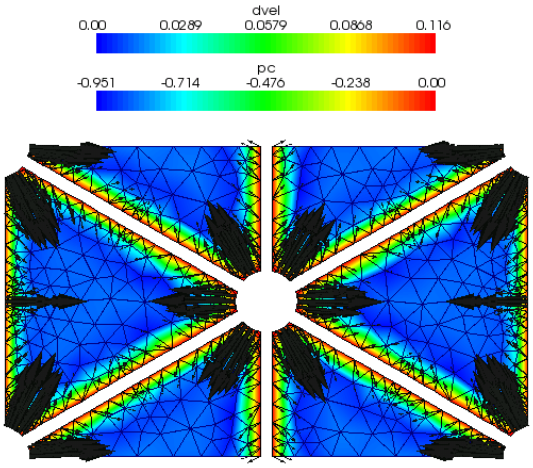
- step 0: pressure ... $\tilde{\pi}^P$(t), perfusion velocities
  scaling: 1.55e-01×



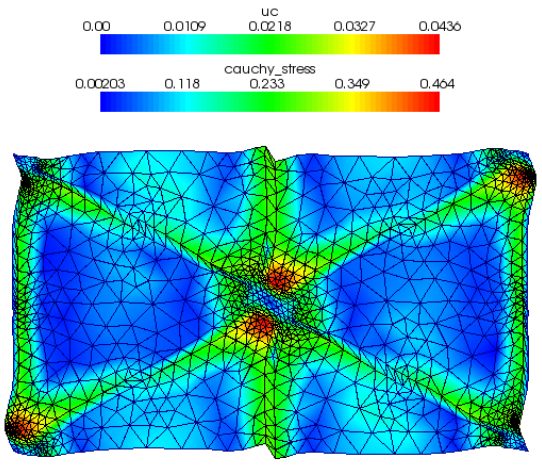
- step 0: displacements ... $\tilde{\omega}^P(t)$
  scaling: 1.00e-01×



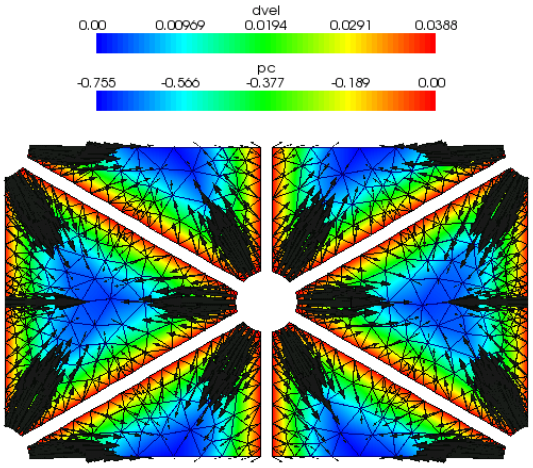
- step 1: pressure ... $\tilde{\pi}^P$(t), perfusion velocities
  scaling: 2.59e+00×



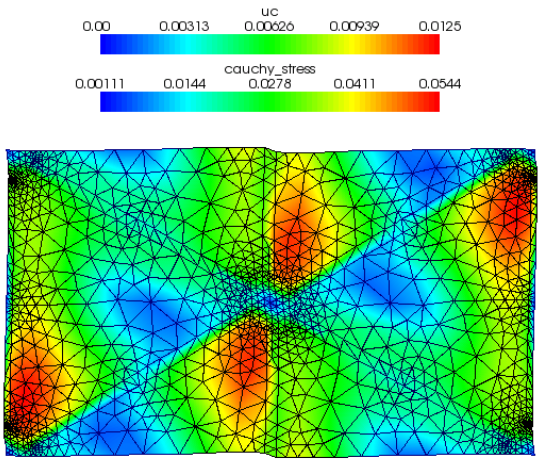
- step 1: displacements ... $\tilde{\omega}^P(t)$
  scaling: 1.00e+00×



- step 10: pressure ... $\tilde{\pi}^P$(t), perfusion velocities
  scaling: 7.74e+00×

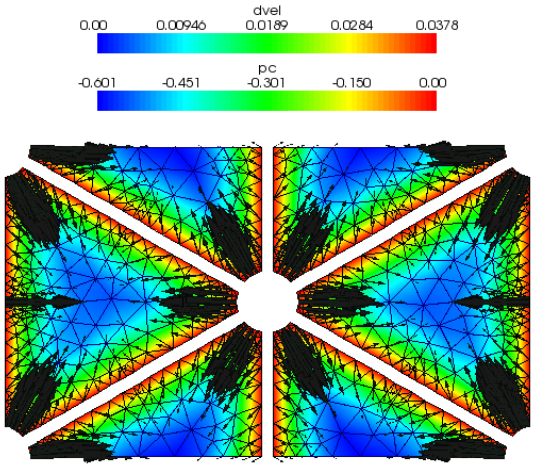


- step 10: displacements ... $\tilde{\omega}^P(t)$
  scaling: 1.00e+00×

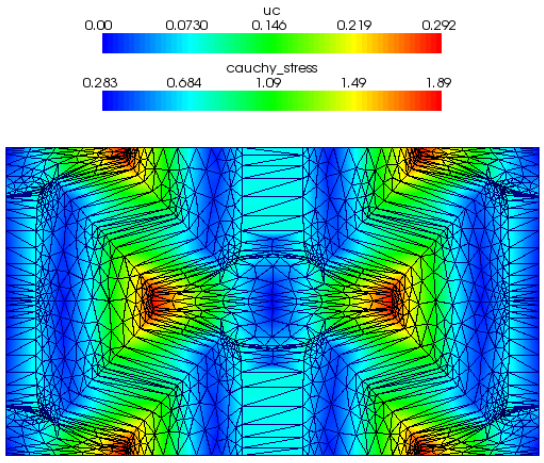


3.3 Steady-state RS correctors

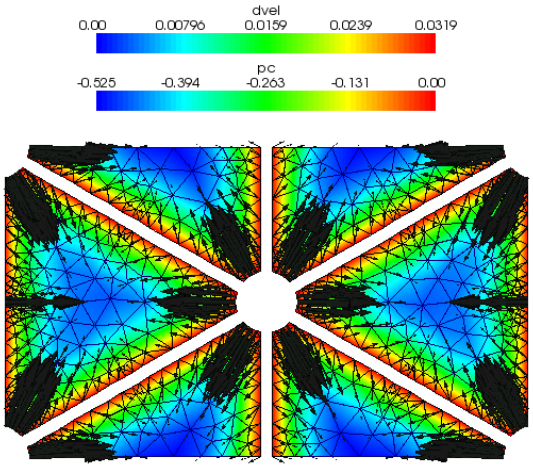
- pressure $\ldots \bar{\pi}^{11}$, perfusion velocities
  scaling: 7.93e+00×



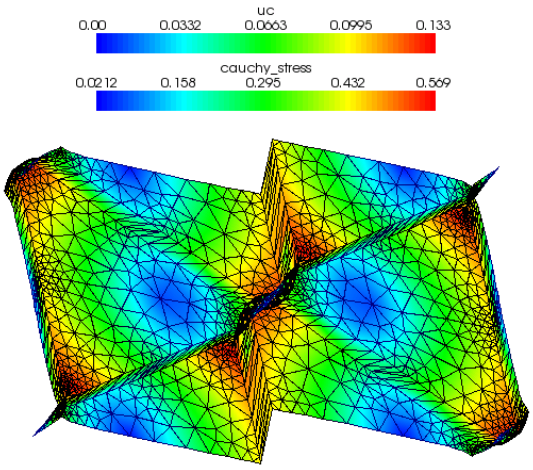
- displacements $\ldots \bar{\omega}^{11}$
  scaling: 1.00e+00×



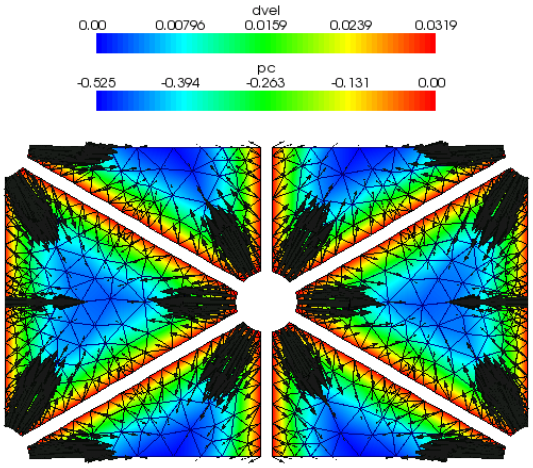
- pressure $\ldots \bar{\pi}^{12}$, perfusion velocities
  scaling: 9.42e+00×



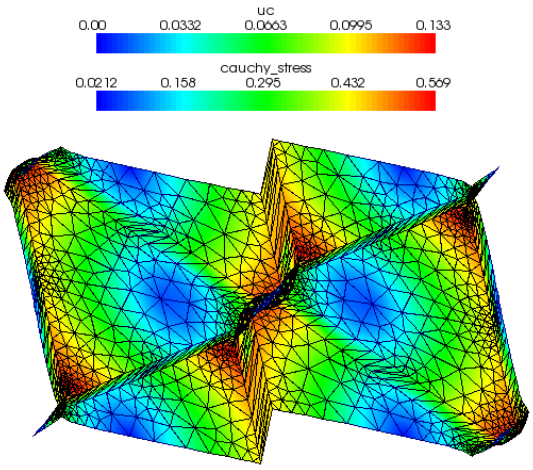
- displacements $\ldots \bar{\omega}^{12}$
  scaling: 1.00e+00×



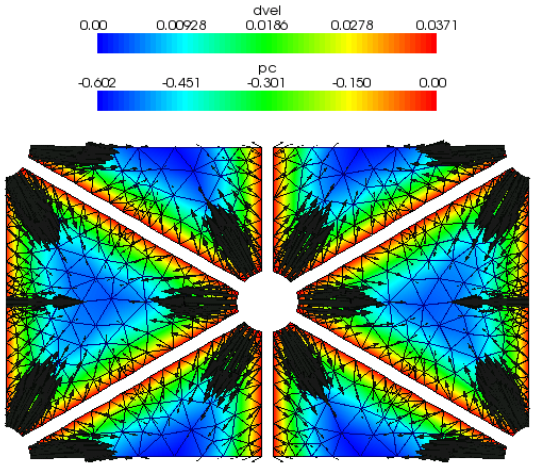
- pressure $\ldots \bar{\pi}^{21}$, perfusion velocities
  scaling: 9.42e+00×



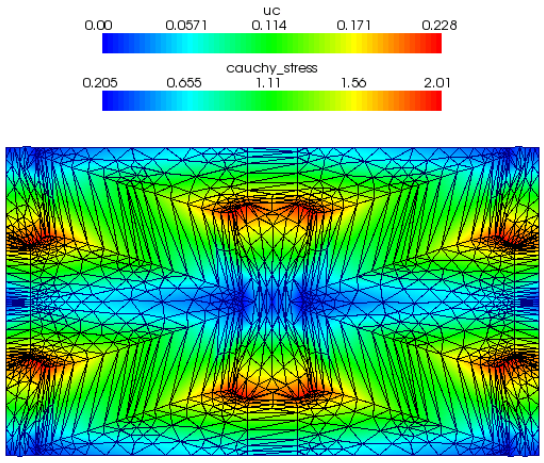
- displacements $\ldots \bar{\omega}^{21}$
  scaling: 1.00e+00×



- pressure ... $\bar{\pi}^{22}$, perfusion velocities
  scaling: 8.08e+00×

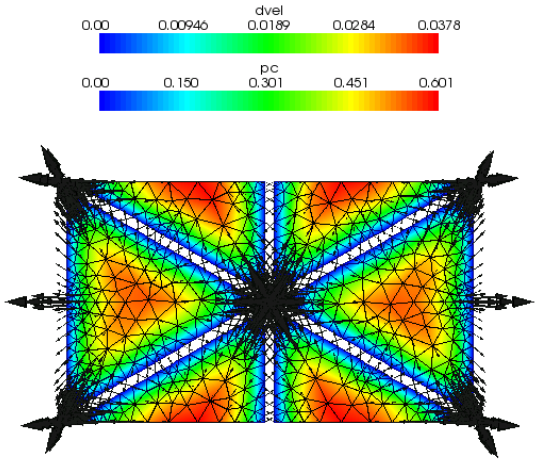


- displacements ... $\bar{\omega}^{22}$
  scaling: 1.00e+00×

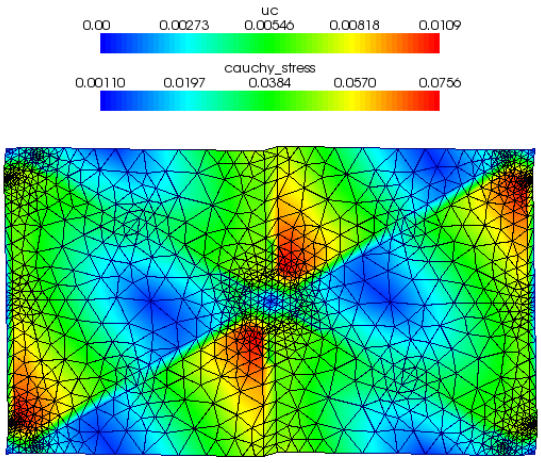


3.4 Time-dependent RS correctors

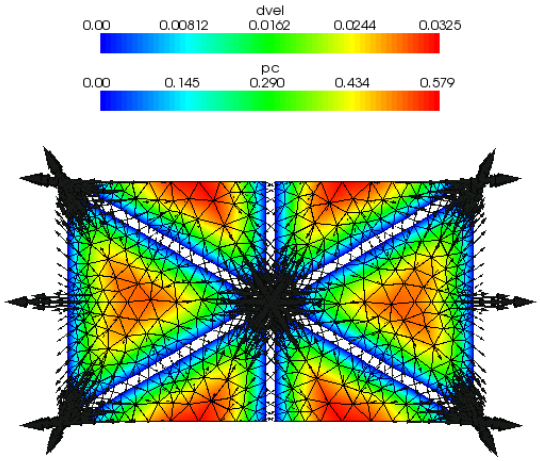
- step 0: pressure ... $\tilde{\pi}^{11}$(t), perfusion velocities
  scaling: 7.93e+00×



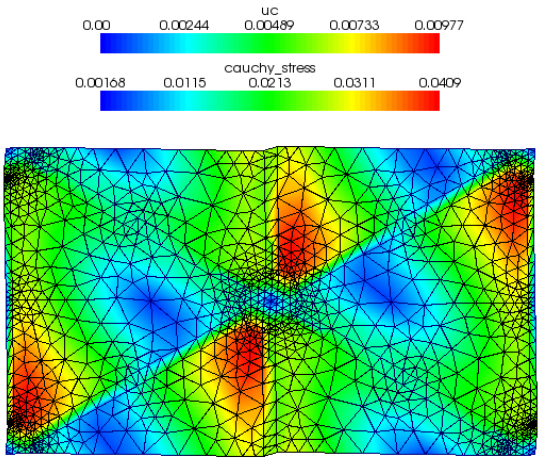
- step 0: displacements ... $\tilde{\omega}^{11}(t)$
  scaling: 1.00e+00×



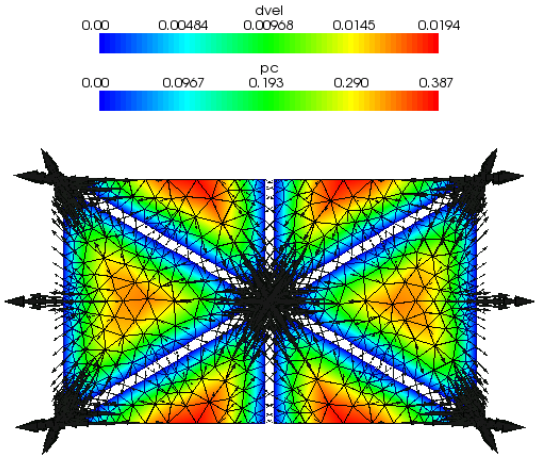
- step 1: pressure ... $\tilde{\pi}^{11}$(t), perfusion velocities
  scaling: 9.24e+00×



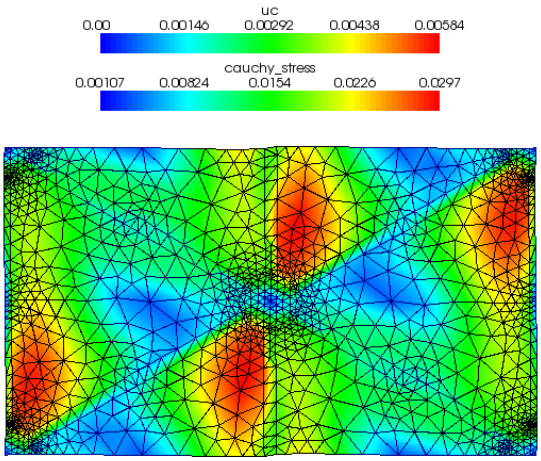
- step 1: displacements ... $\tilde{\omega}^{11}(t)$
  scaling: 1.00e+00×



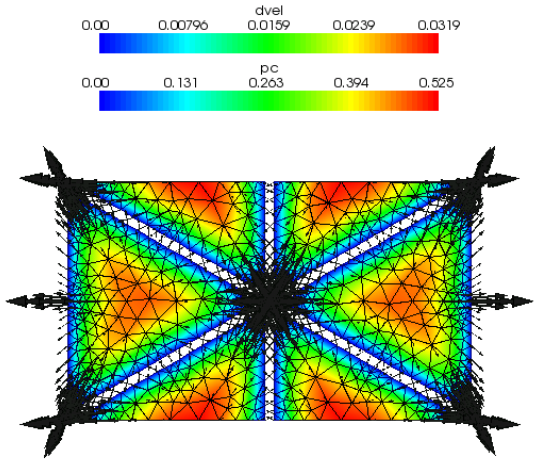
- step 10: pressure $\ldots \tilde{\pi}^{11}(\mathrm{t})$, perfusion velocities
  scaling: 1.55e+01×



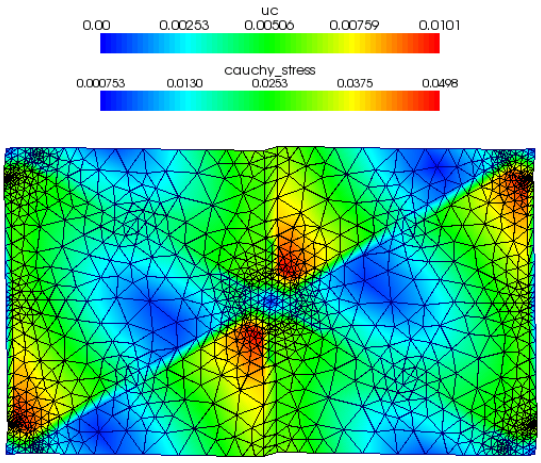
- step 10: displacements $\ldots \tilde{\omega}^{11}(t)$
  scaling: 1.00e+00×



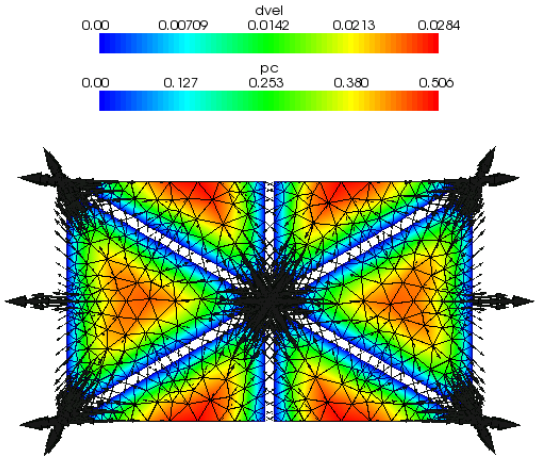
- step 0: pressure ... $\tilde{\pi}^{12}$(t), perfusion velocities
  scaling: 9.42e+00×



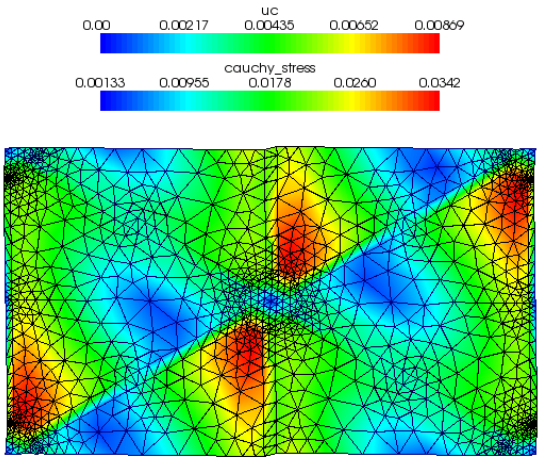
- step 0: displacements ... $\tilde{\omega}^{12}(t)$
  scaling: 1.00e+00×



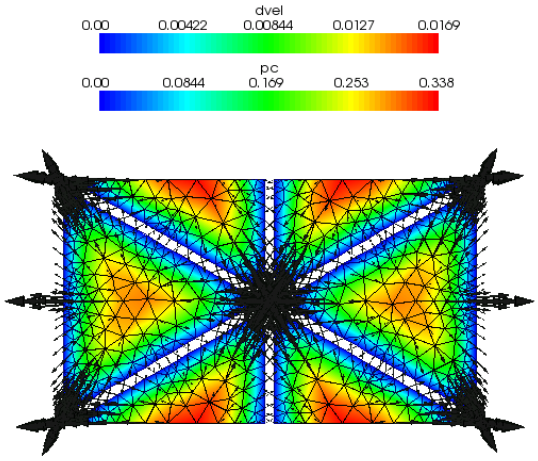
- step 1: pressure ... $\tilde{\pi}^{12}$(t), perfusion velocities
  scaling: 1.06e+01×



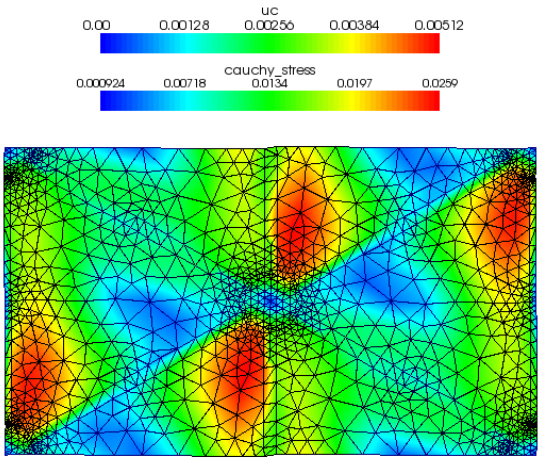
- step 1: displacements ... $\tilde{\omega}^{12}(t)$
  scaling: 1.00e+00×



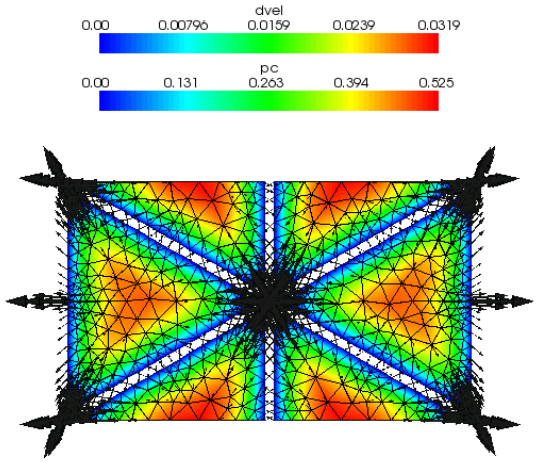
- step 10: pressure $\ldots \tilde{\pi}^{12}(\mathrm{t})$, perfusion velocities
  scaling: 1.78e+01×



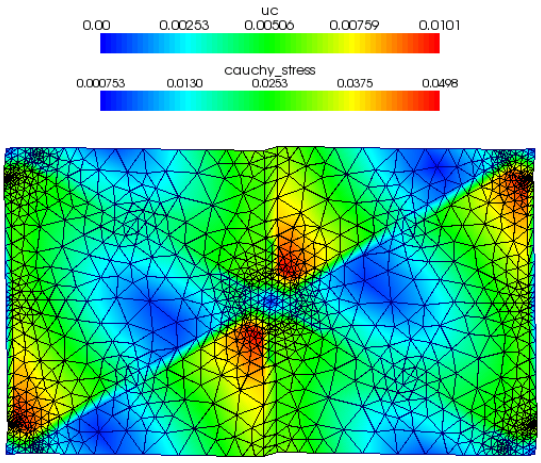
- step 10: displacements $\ldots \tilde{\omega}^{12}(t)$
  scaling: 1.00e+00×



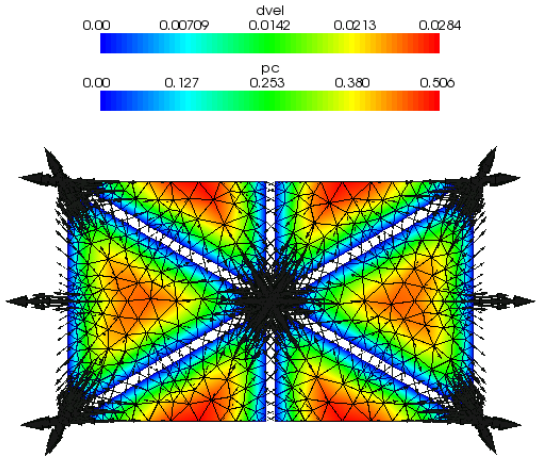
- step 0: pressure ... $\tilde{\pi}^{21}$(t), perfusion velocities
  scaling: 9.42e+00×



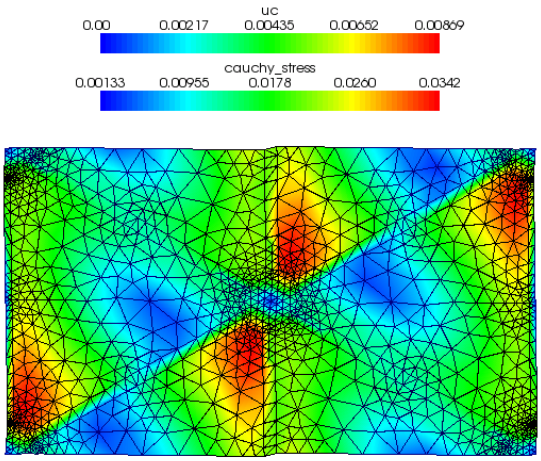
- step 0: displacements ... $\tilde{\omega}^{21}(t)$
  scaling: 1.00e+00×



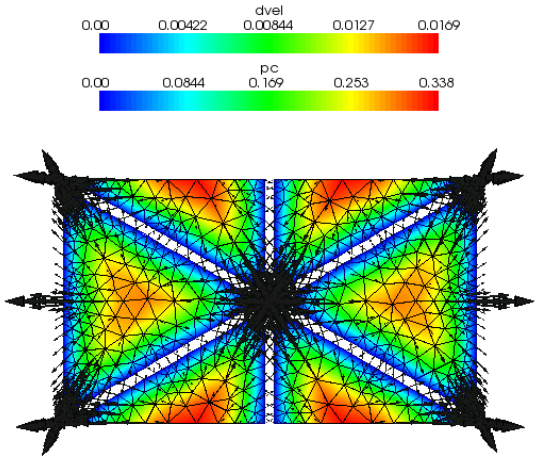
- step 1: pressure ... $\tilde{\pi}^{21}$(t), perfusion velocities
  scaling: 1.06e+01×



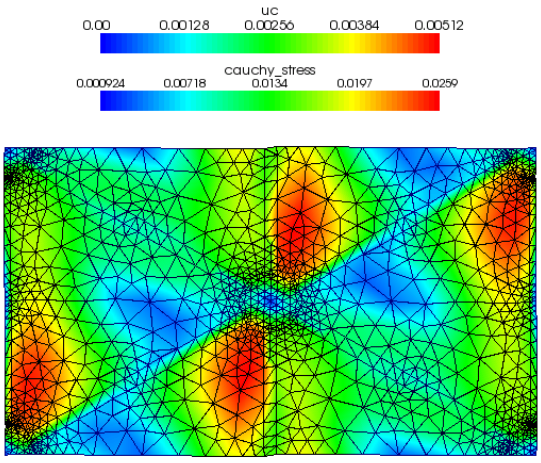
- step 1: displacements ... $\tilde{\omega}^{21}(t)$
  scaling: 1.00e+00×



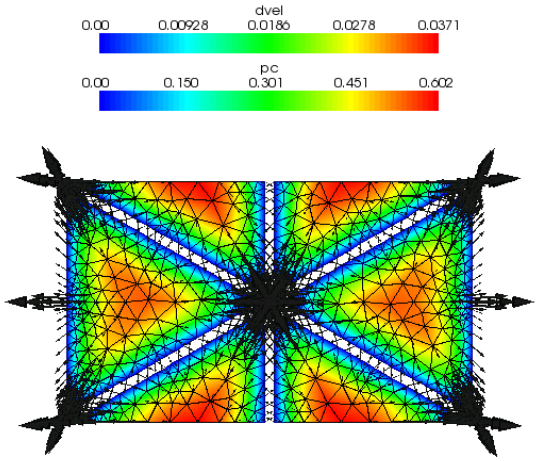
- step 10: pressure $\ldots \tilde{\pi}^{21}(\mathrm{t})$, perfusion velocities
  scaling: 1.78e+01×



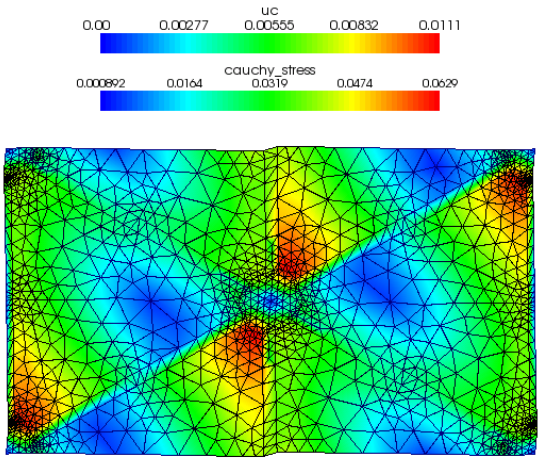
- step 10: displacements $\ldots \tilde{\omega}^{21}(t)$
  scaling: 1.00e+00×



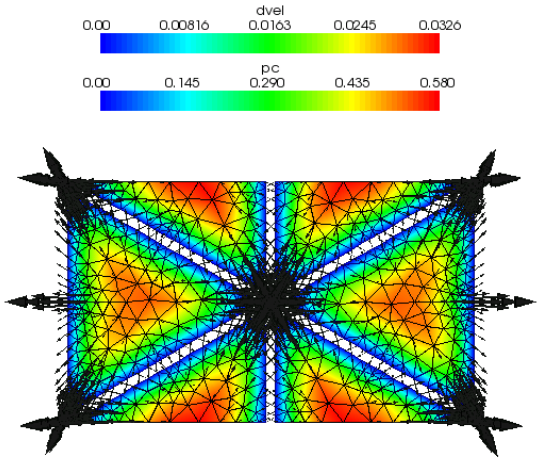
- step 0: pressure ... $\tilde{\pi}^{22}$(t), perfusion velocities
  scaling: 8.08e+00×



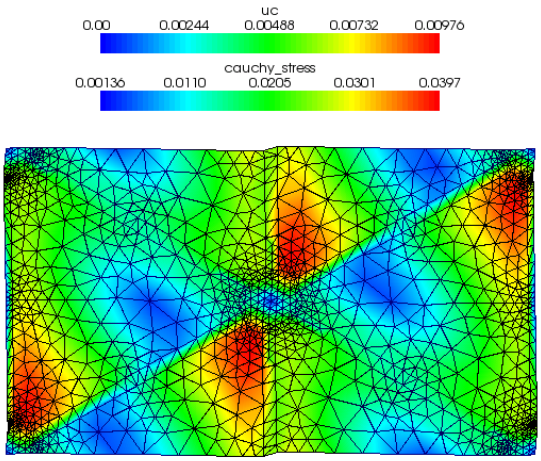
- step 0: displacements ... $\tilde{\omega}^{22}(t)$
  scaling: 1.00e+00×



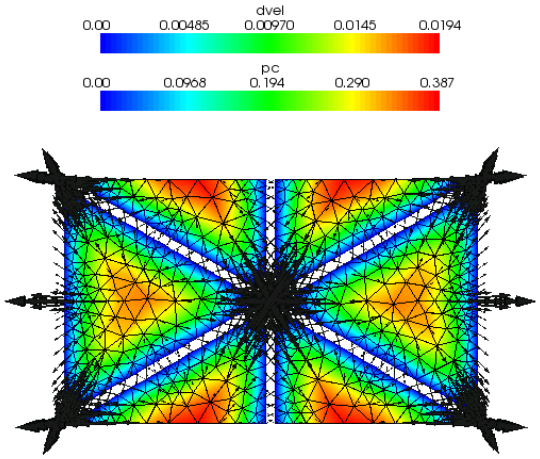
- step 1: pressure ... $\tilde{\pi}^{22}$(t), perfusion velocities
  scaling: 9.19e+00×



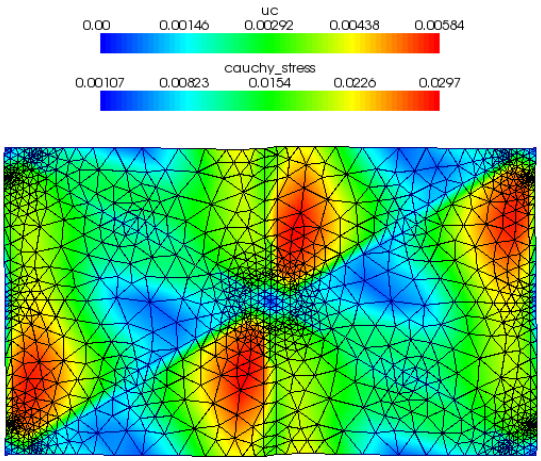
- step 1: displacements ... $\tilde{\omega}^{22}(t)$
  scaling: 1.00e+00×



- step 10: pressure $\ldots \tilde{\pi}^{22}(\mathrm{t})$, perfusion velocities
  scaling: 1.55e+01×

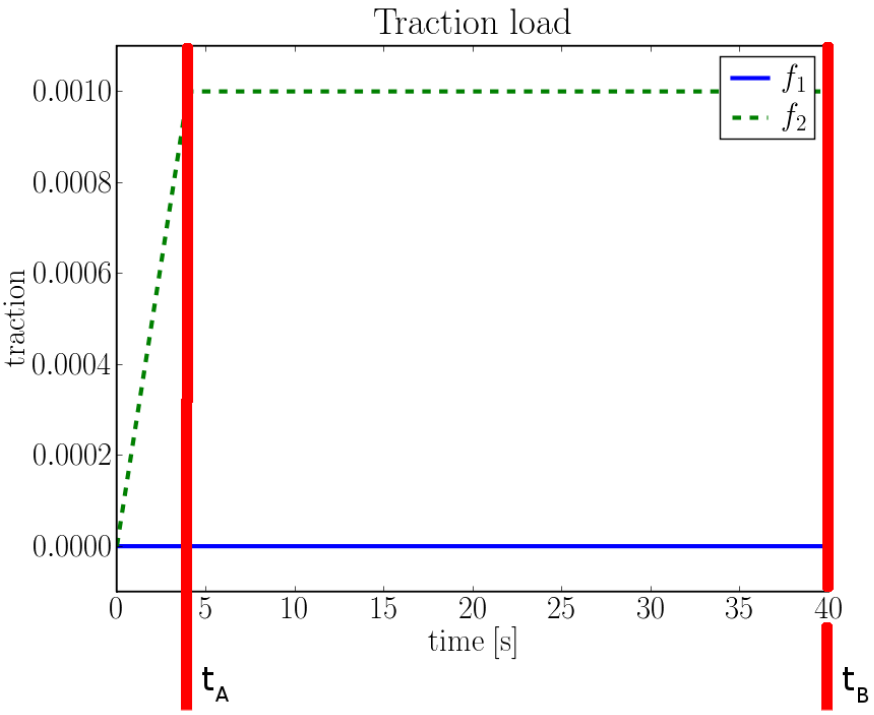


- step 10: displacements $\ldots \tilde{\omega}^{22}(t)$
  scaling: 1.00e+00×



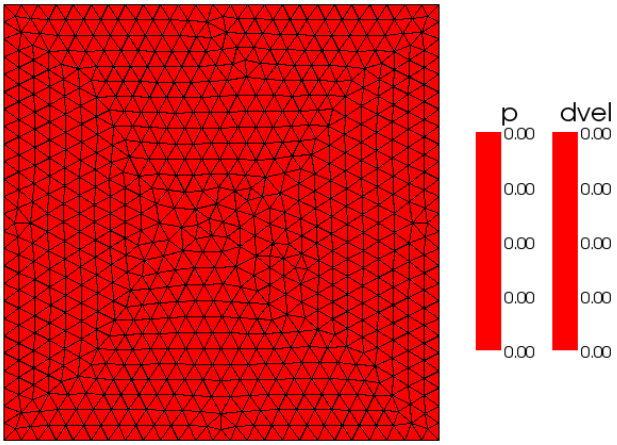
4 Macroscopic Solution

The structure is fixed on its left side and loaded by traction in y direction on the right side boundary:

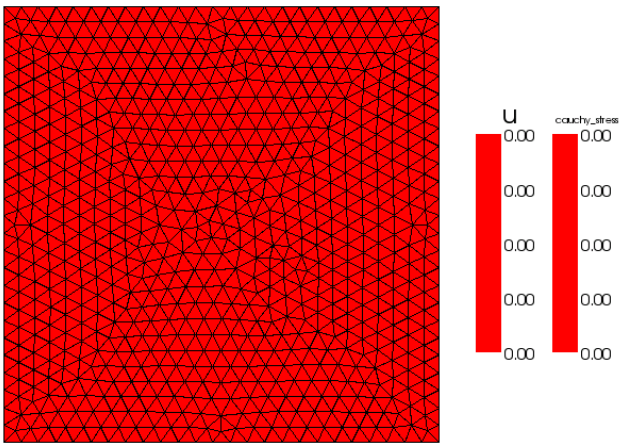


4.1 Bones macro-problem

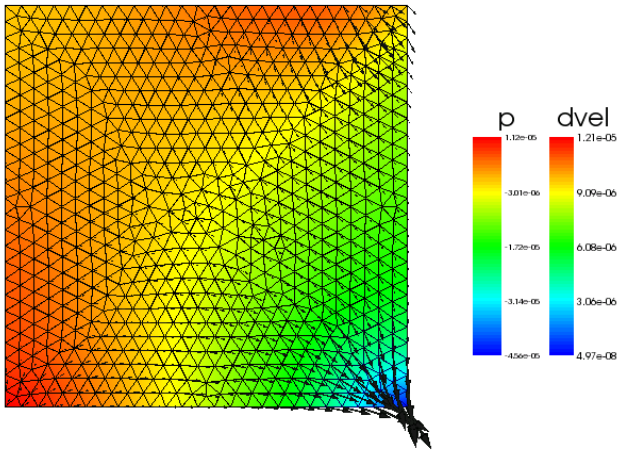
- step 0: pressure ... p, perfusion velocities
  scaling: inf×



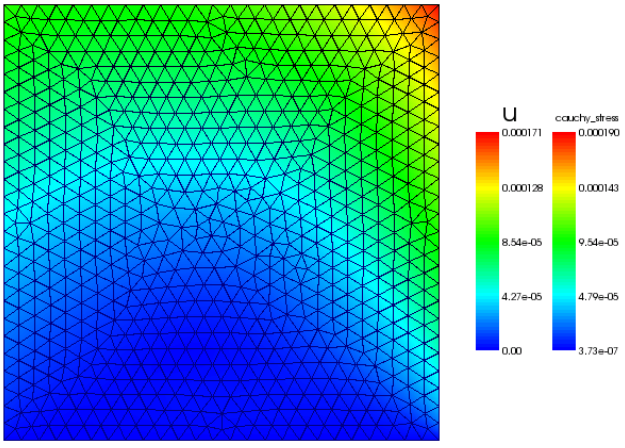
- step 0: displacements ... u
  scaling: 1.00e+01×



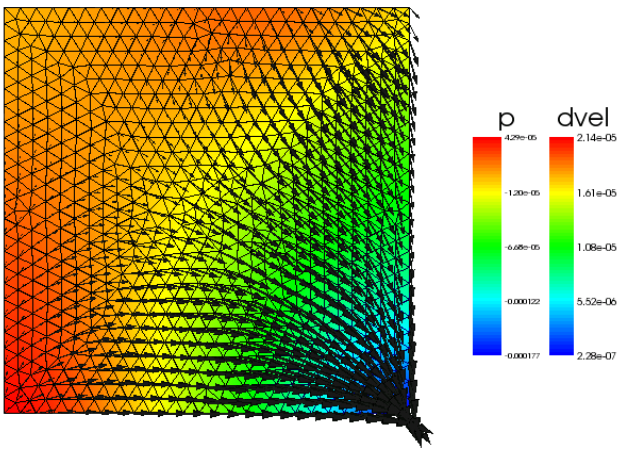
- step 1: pressure . . . p, perfusion velocities
  scaling: 2.48e+04×



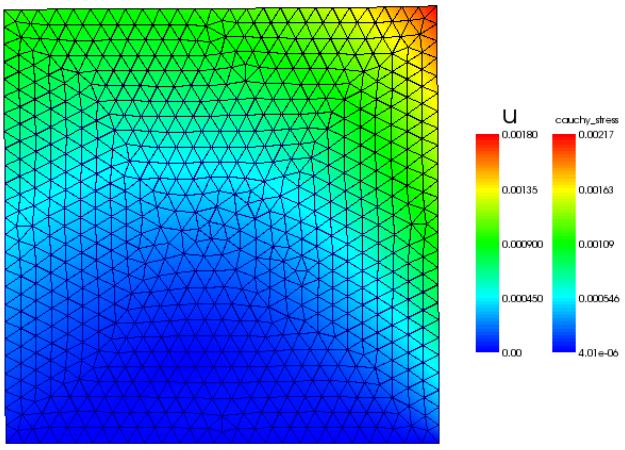
- step 1: displacements . . . u
  scaling: 1.00e+01×



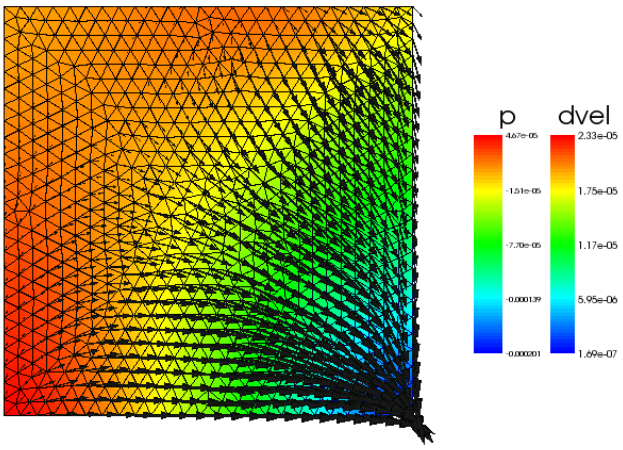
- step 10: pressure ... p, perfusion velocities
  scaling: 1.40e+04×



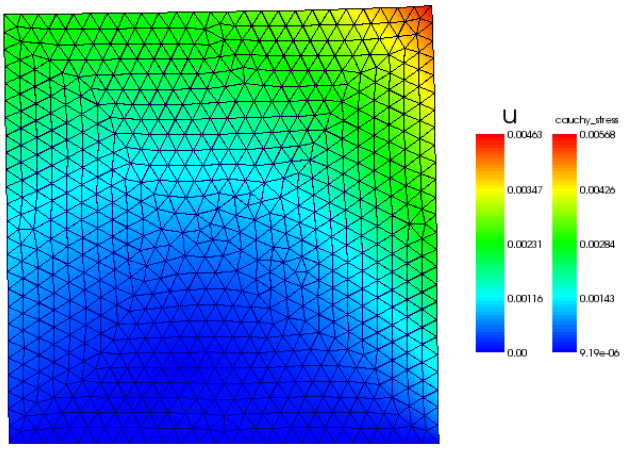
- step 10: displacements ... u
  scaling: 1.00e+01×



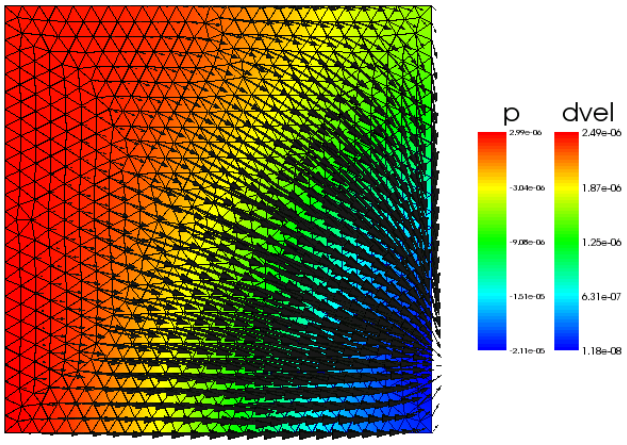
- step 25: pressure ... p, perfusion velocities
  scaling: 1.29e+04×



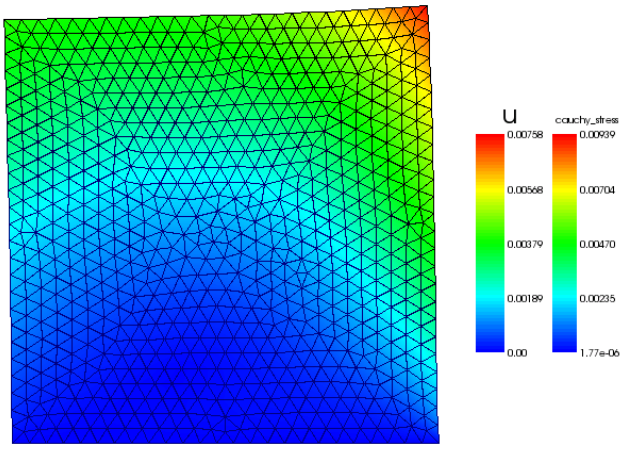
- step 25: displacements ... u
  scaling: 1.00e+01×



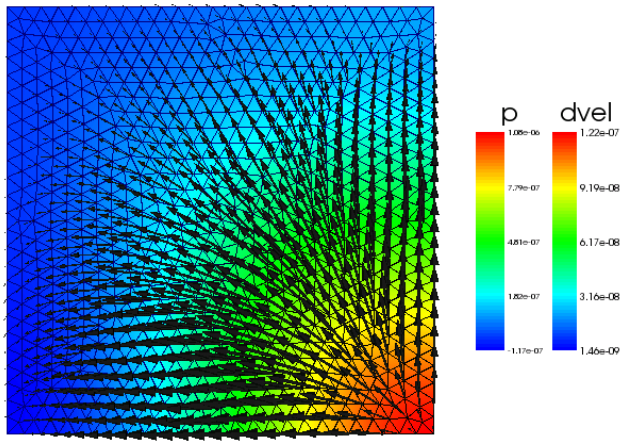
- step 50: pressure . . . p, perfusion velocities
  scaling: 1.21e+05×



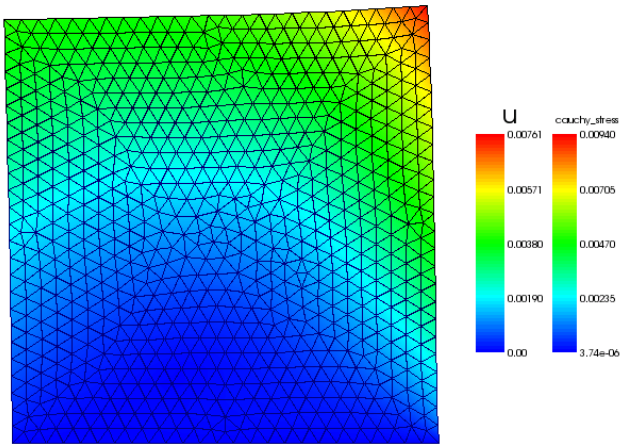
- step 50: displacements . . . u
  scaling: 1.00e+01×



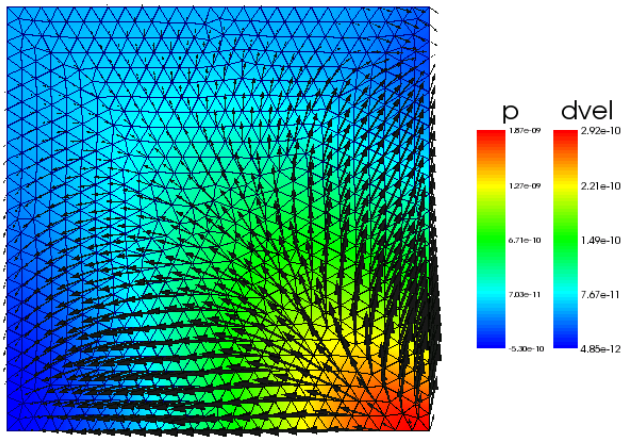
- step 100: pressure . . . p, perfusion velocities
  scaling: 2.46e+06×



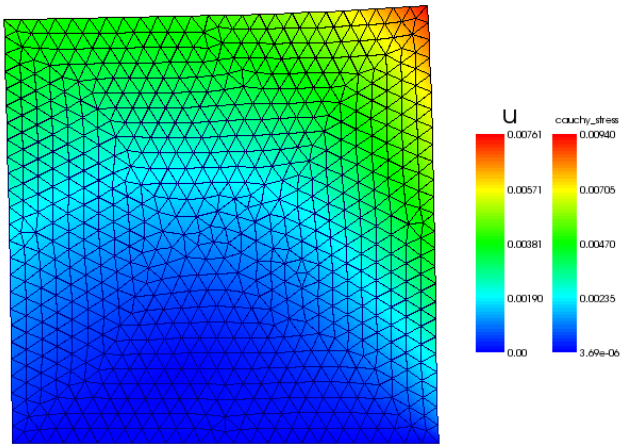
- step 100: displacements . . . u
  scaling: 1.00e+01×



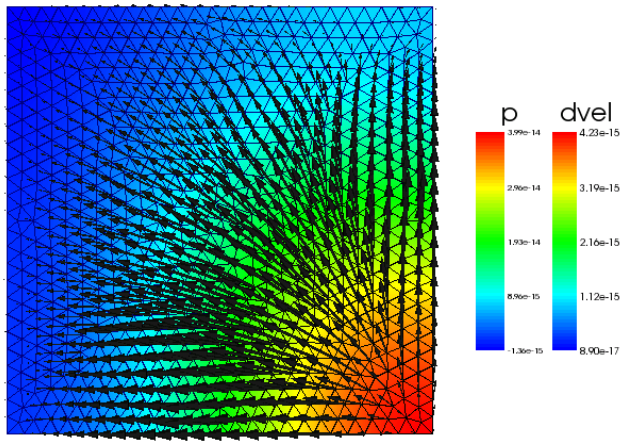
- step 200: pressure . . . p, perfusion velocities
  scaling: 1.03e+09×



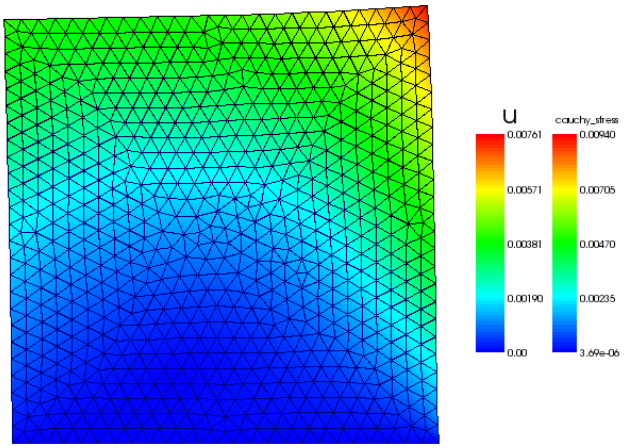
- step 200: displacements . . . u
  scaling: 1.00e+01×



- step 400: pressure $\dots p$, perfusion velocities
  scaling: 7.10e+13×

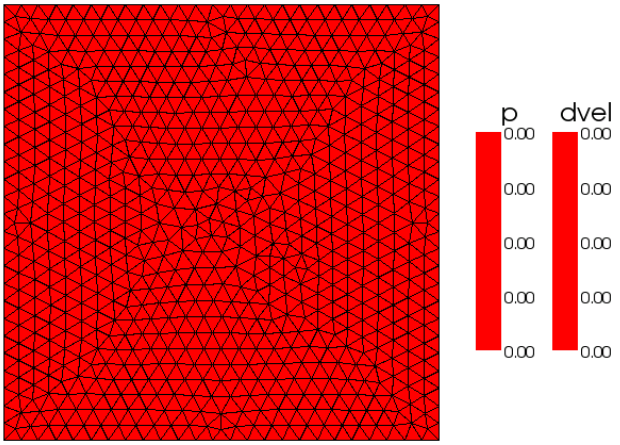


- step 400: displacements $\dots u$
  scaling: 1.00e+01×



4.2 Steady-state solution of bones macro-problem

- pressure . . . p, perfusion velocities
  scaling: inf×



- displacements . . . u
  scaling: 1.00e+01×