

PRESTRESS

Includes key MSM calculation outputs* → 0003_prestress.dat

forces at the boundary → 0003_bdryForce.dat

node coordinates* → 0003_node_coords.dat

body forces (negative tractions) → 0003_bforce.dat

elastic displacement of thin sheet ← 0003_monolayerDisp.dat

boundary displacement ← 0003_bdryDisp.dat

nodal connectivity ← 0003_node_conn.dat

*Main measurements of interest

"*_prestress.dat" file

| 1 | -0.10871022E+03 | 0.28681485E+03 | 0.00000000E+00 | 0.28681485E+03 | -0.10871022E+03 | 0.00000000E+00 | 0.10000000E+01 | 0.62630187E+05 | |
|---|-----------------|----------------|-----------------|----------------|-----------------|-----------------|----------------|----------------|--|
| 2 | 0.13294447E+02 | 0.24142563E+03 | 0.84233563E+02 | 0.26915656E+03 | -0.14436479E+02 | 0.31270469E+00 | 0.04985040E+00 | 0.37048100E+05 | |
| 3 | -0.55351863E+02 | 0.31005363E+03 | 0.23293718E+02 | 0.31153256E+03 | -0.56831791E+02 | 0.63362862E-01 | | | |
| 4 | 0.14776647E+03 | 0.29436685E+03 | -0.35463849E+02 | 0.30249517E+03 | 0.13963815E+03 | -0.22340721E+00 | | | |

To find column definitions:

1. From MSM menu, select **Help**.
2. In the AnViM window, scroll down to **AnViM - Mechanics - 01 Gamma**.



AnViM - Mechanics - 0.1 Gamma

Location of the results files: folder/analysis/

Other parameters for prestress calculation: Youngs Modulus = 1GPa, Poisson's ratio = 0.5, cell height = 5 microns (for justification, see Tambe et al, PLoS One 2013)

prestress.dat: sx(Pa), sy(Pa), sxy(Pa), maxP(Pa), minP(Pa), maxPex(unitless), maxPey(unitless), strainEnergy(Joules)

bforce.dat: tx(Pa), ty(Pa)

node_coords.dat: x(meters), y(meters)

allForces.dat: x(pixel), y(pixel), tx(Pa), ty(Pa), sx(Pa), sy(Pa), sxy(Pa), maxP(Pa), minP(Pa), maxPex(unitless), maxPey(unitless), strainEnergy(Joules)

disp.dat or vel.dat: x(pixel), y(pixel), u(pixel/successive frame), v(pixel/successive frame), speed(pixel/successive frame), matching, similar for second peak

traction.dat: x(pixel), y(pixel), tx(Pa), ty(Pa)

RULES for cell-cell force calculation: - There should be one continuous sheet (with holes identified in images from 'bwimages/' folder)

RULES for cell-cell force calculation: - There will be 20% cutoff from the boundary for each boundary that has cells crossing it

RULES for cell-cell force calculation: - Free edges of the monolayer - EDGE: single free edge must be oriented to the

OK