It's chosen a problem type: *Plates*

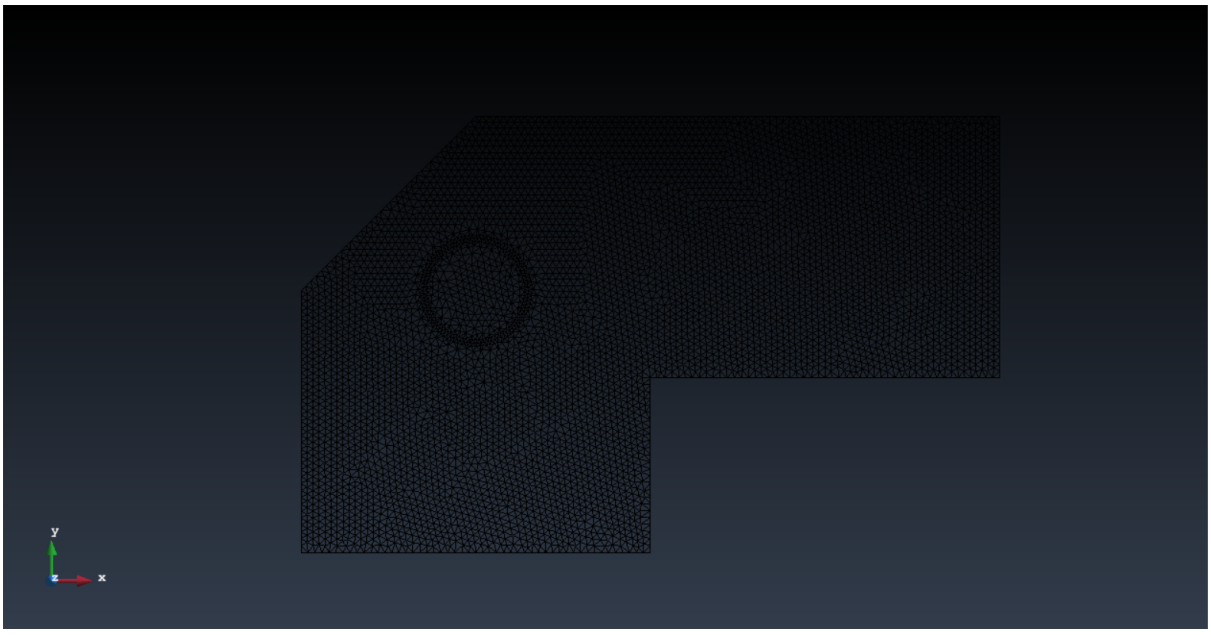
Material, self weight condition, and constraints are settled.

The material chosen for the unique surface defined by the four sides has the following properties:

$E=2,1*10^{11}$ Pa
$\nu=0,3$
Load: $q=1*10^{4}$ N/m^2
thickness=0,05 m

Triangular linear mesh: (DKT)

Num. of Triangle elements=11603
Num. of nodes=5912



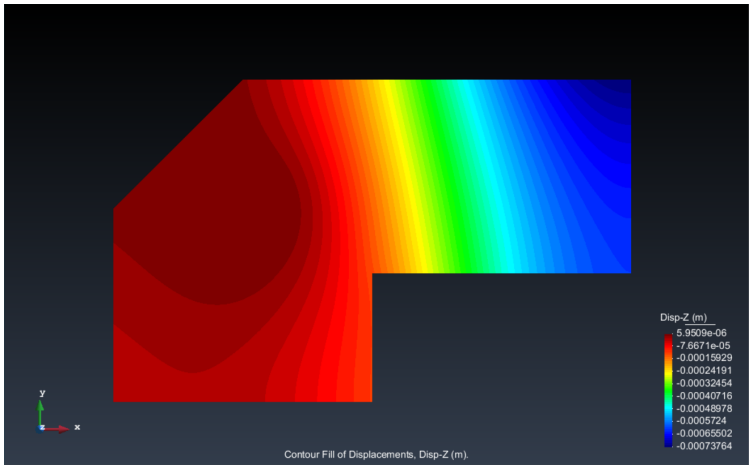
It has been only represented a quarter, given the symmetry of the case.
The material is the same for the two surfaces.

The constraints are, a **zero z-displacement at the column**, and θ_x and θ_y are 0 at top right boundary and bottom left boundary respectively, in order to take into consideration the symmetry.

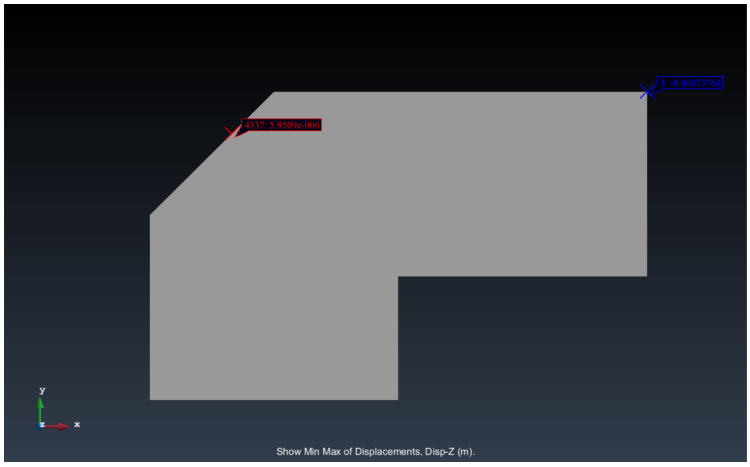
PRACTICE 3 Exercise 2

COMPUTATIONAL STRUCTURAL MECHANICS AND DYNAMICS

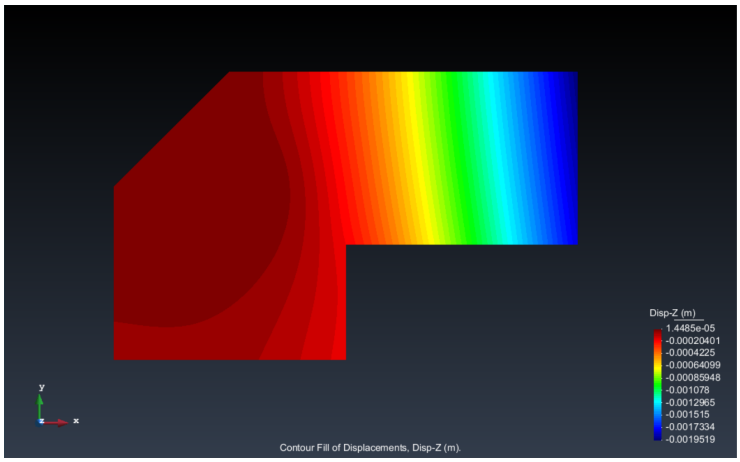
Marcos Boniquet Aparicio



x,y Displacements are 0, at the middle plane!. Maximum z-displacement is 7,3764*10^{-4}m, while at the corner behind the column we even have small positive displacement, 5,9*10^{-6}m.



Without constraints on θ_x and θ_y the results would have differed, and would be accurate but for a non-symmetric case. As expected the z-displacement would be much higher:



1,851910^{-3} (NO-SYMMETRIC) Vs 7,3764*10^{-4} (SYMMETRIC)=2,5 TIMES

PRACTICE 3 Exercise 2

COMPUTATIONAL STRUCTURAL MECHANICS AND DYNAMICS

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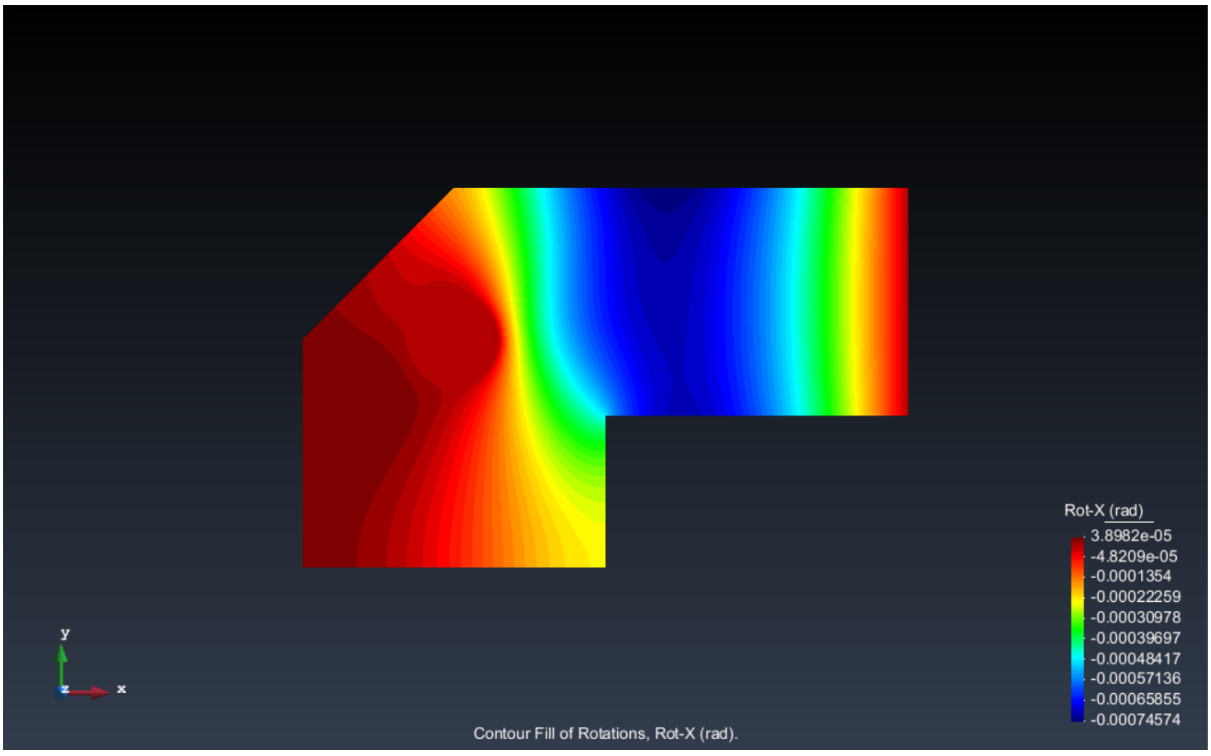
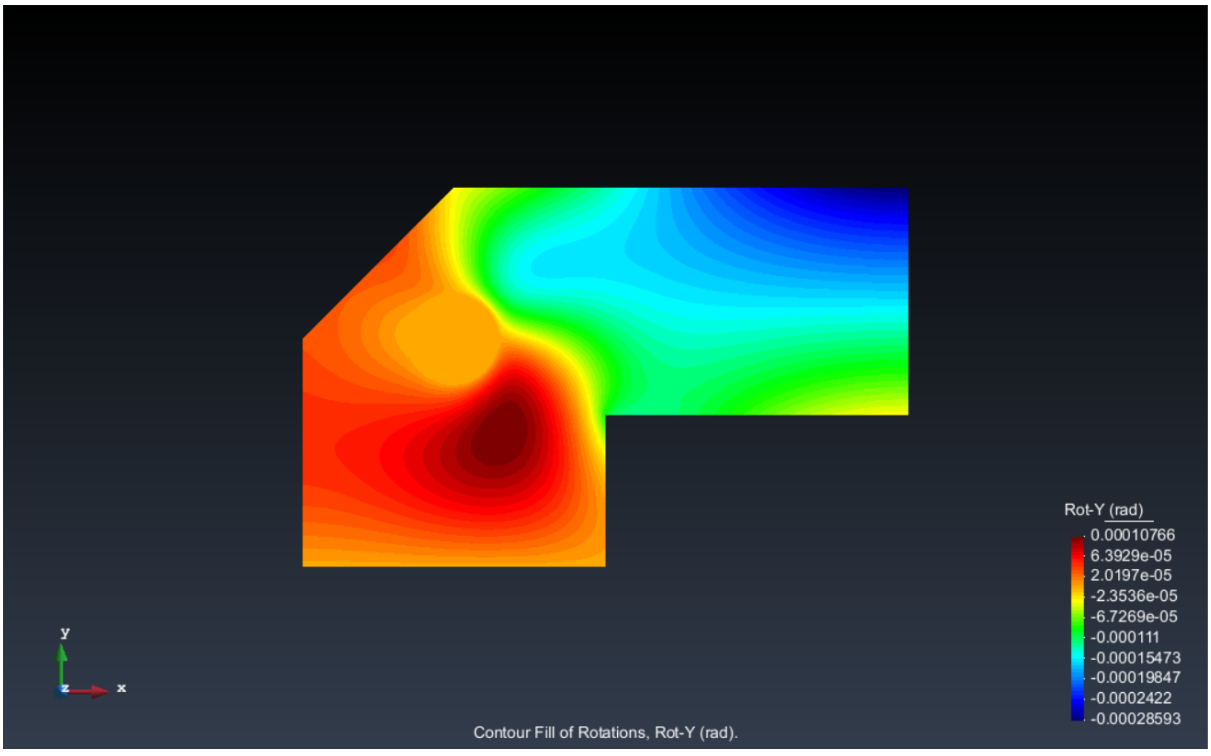
ROTATIONS:

x-axis



y-axis



PRACTICE 3 Exercise 2

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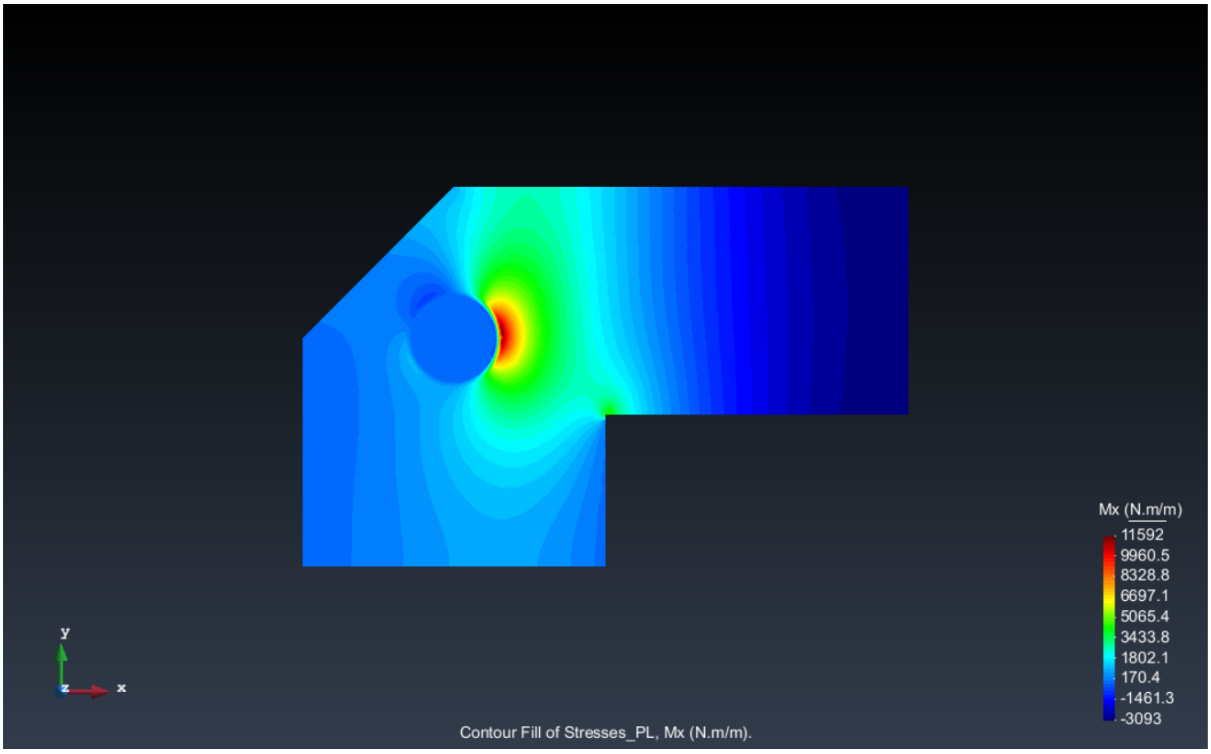
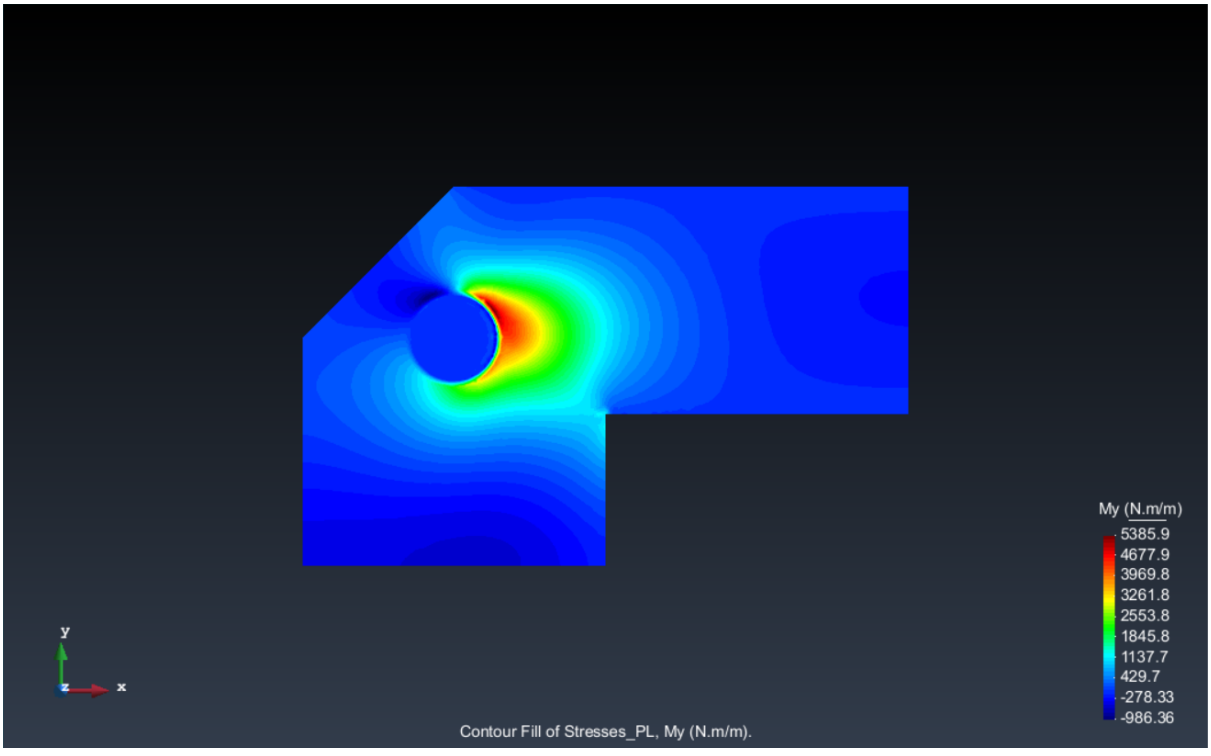
MOMENTUMS:





PRACTICE 3 Exercise 2

COMPUTATIONAL STRUCTURAL MECHANICS AND DYNAMICS

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STRESSES: