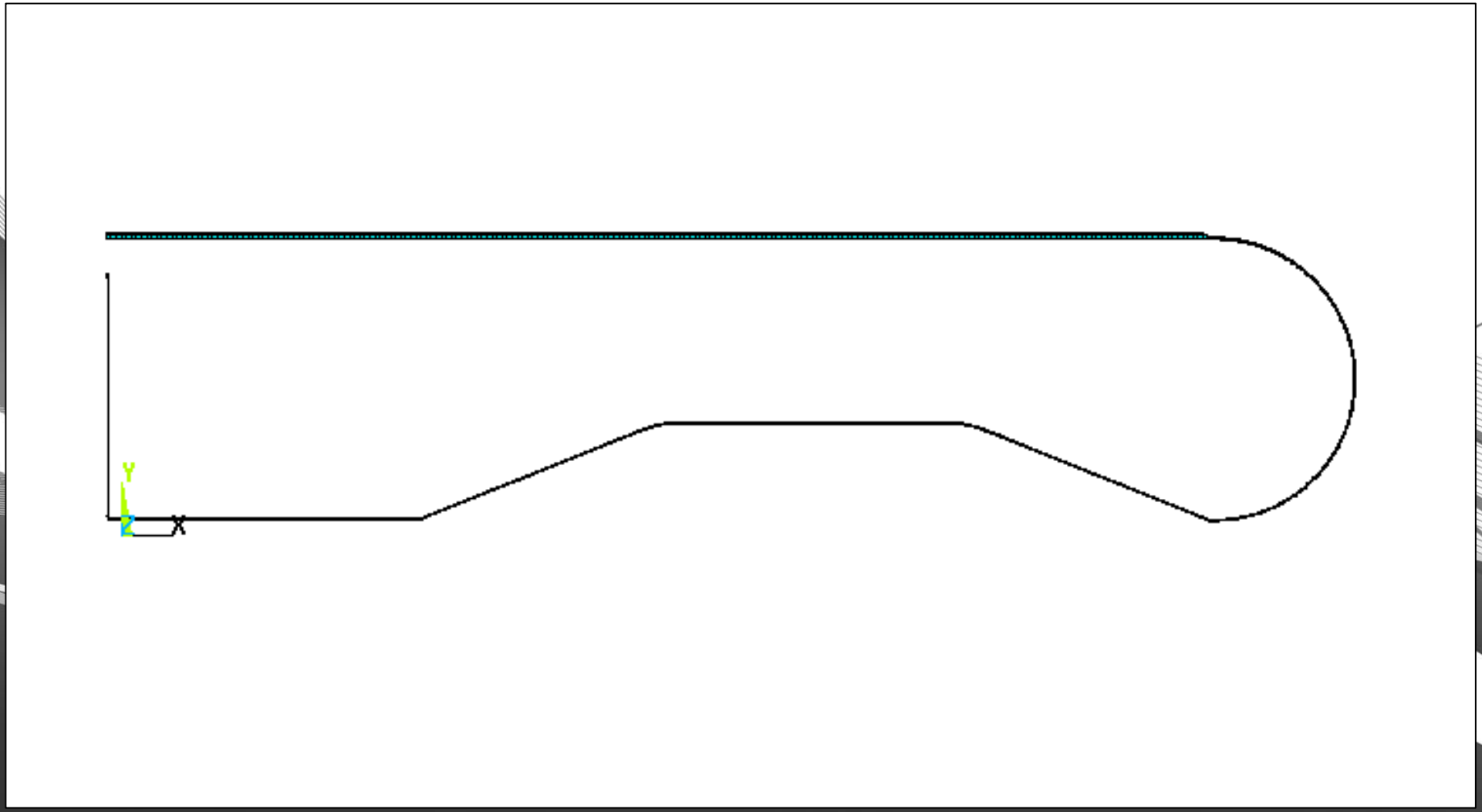
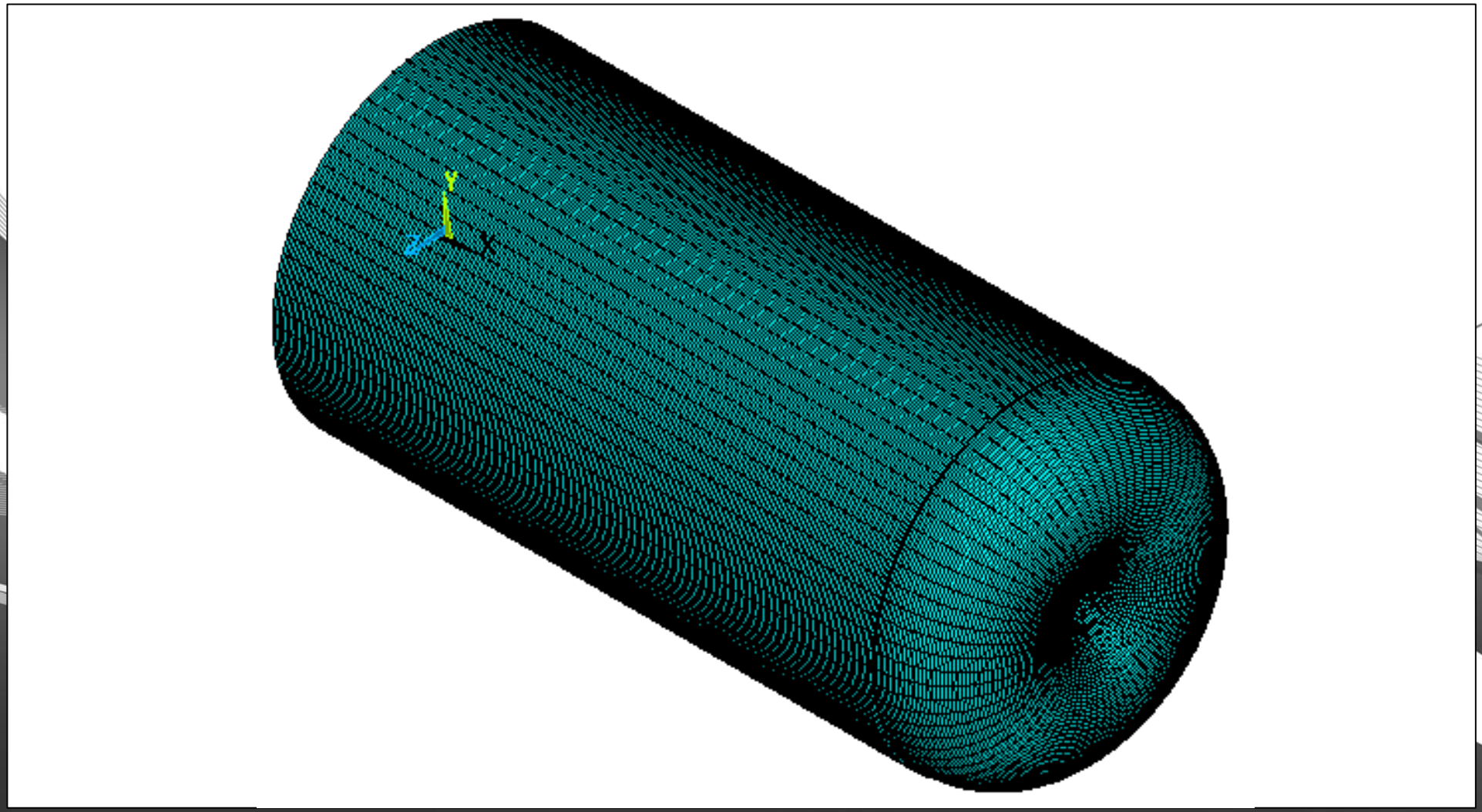
Magneto-structural analysis of horn under multiple charge pulses – update

Magnetic horn model



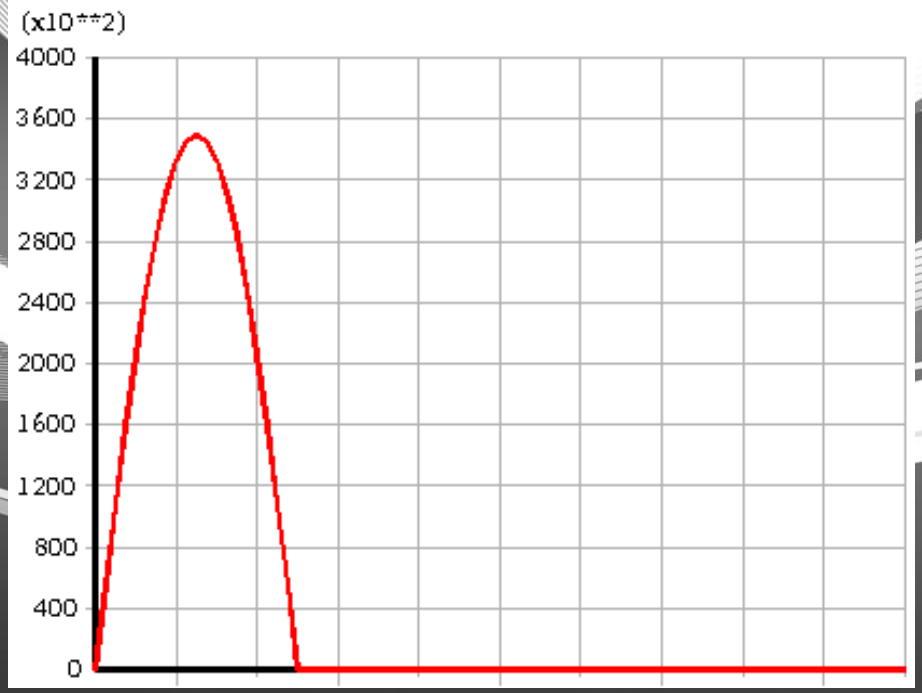
Magnetic horn model



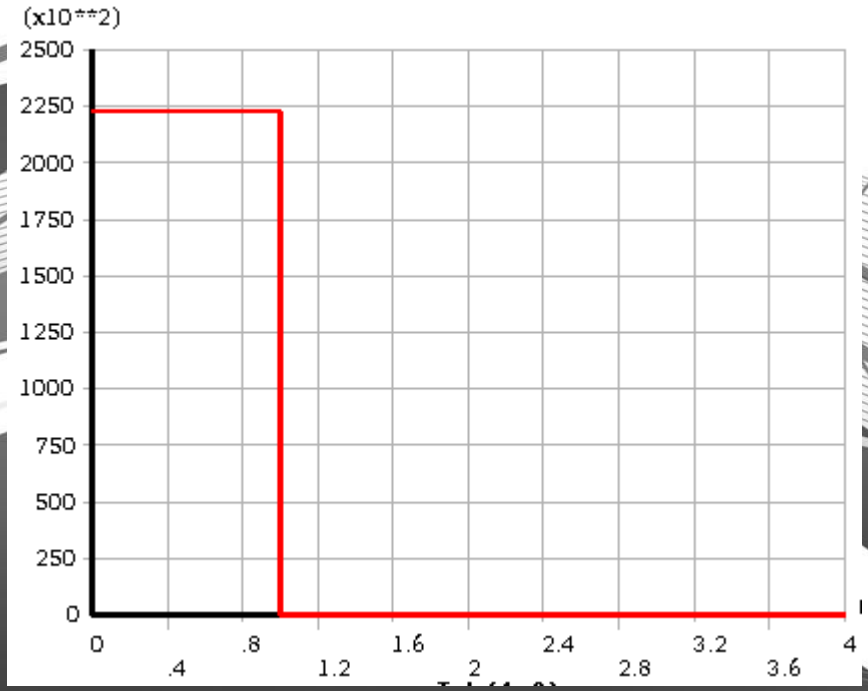
Impulse current shapes

f_s=12.5[Hz],f=5000[Hz]

Half-sine impulse

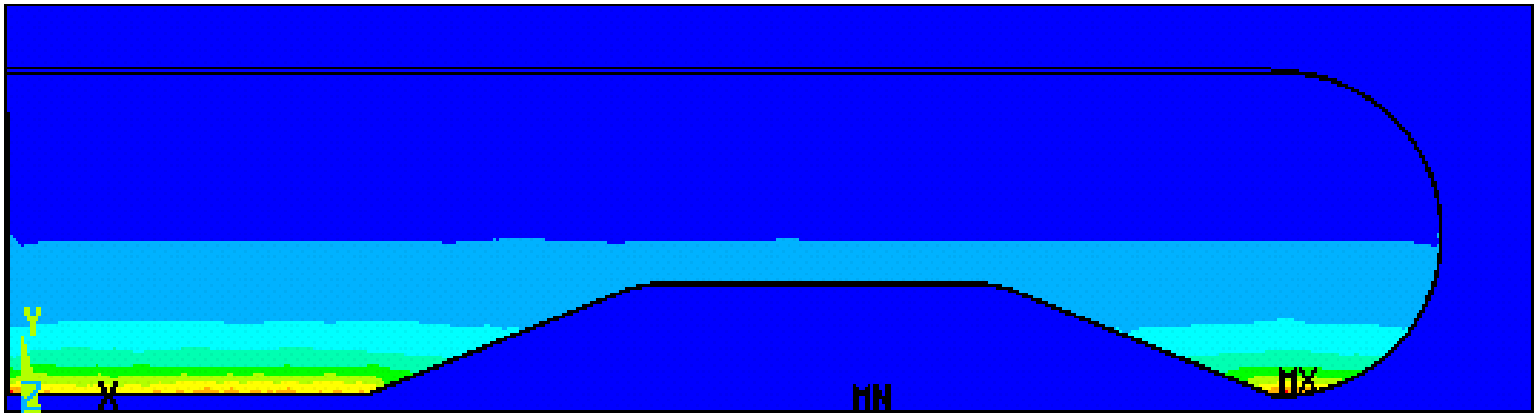


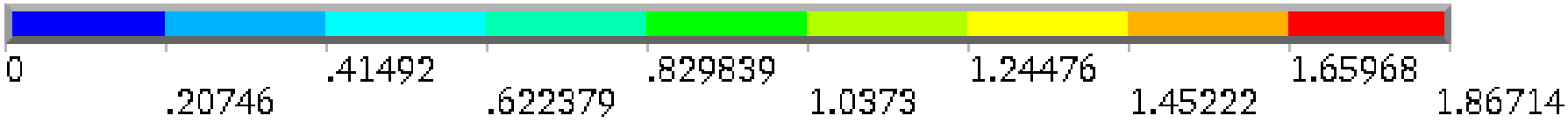
Square impulse



Magnetic results

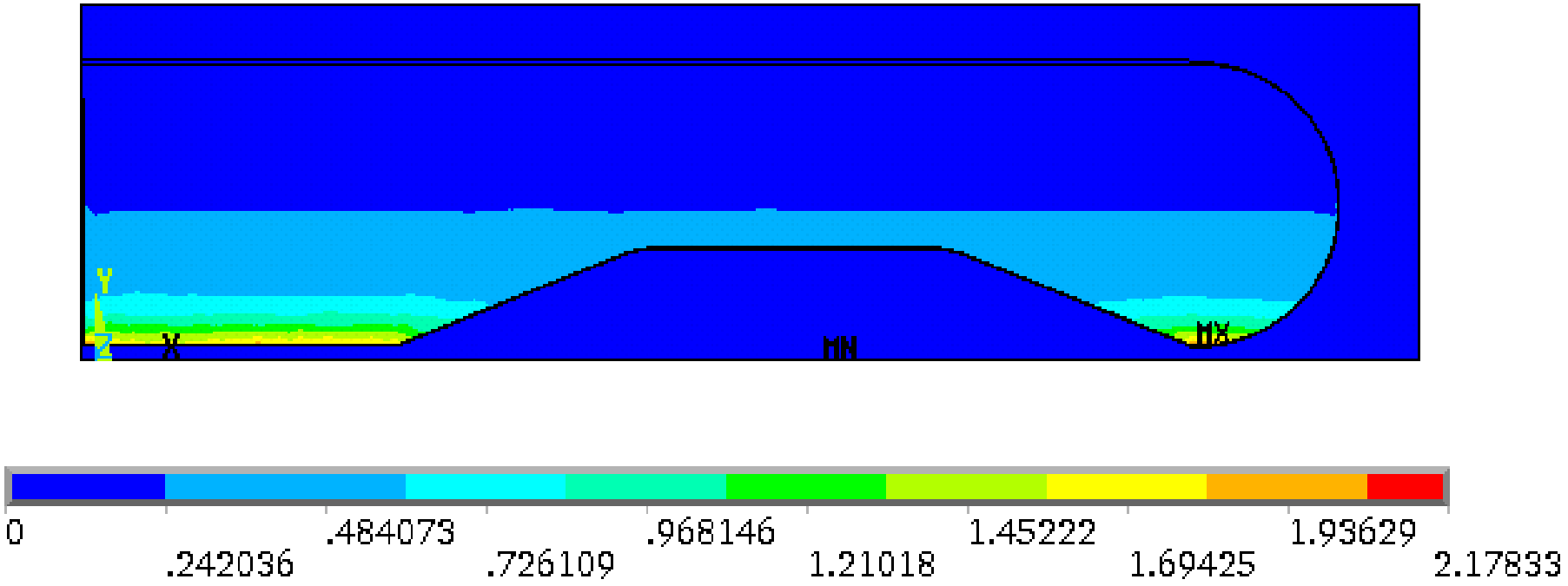
Max magnetic flux density[T], I_{max}=300[kA]





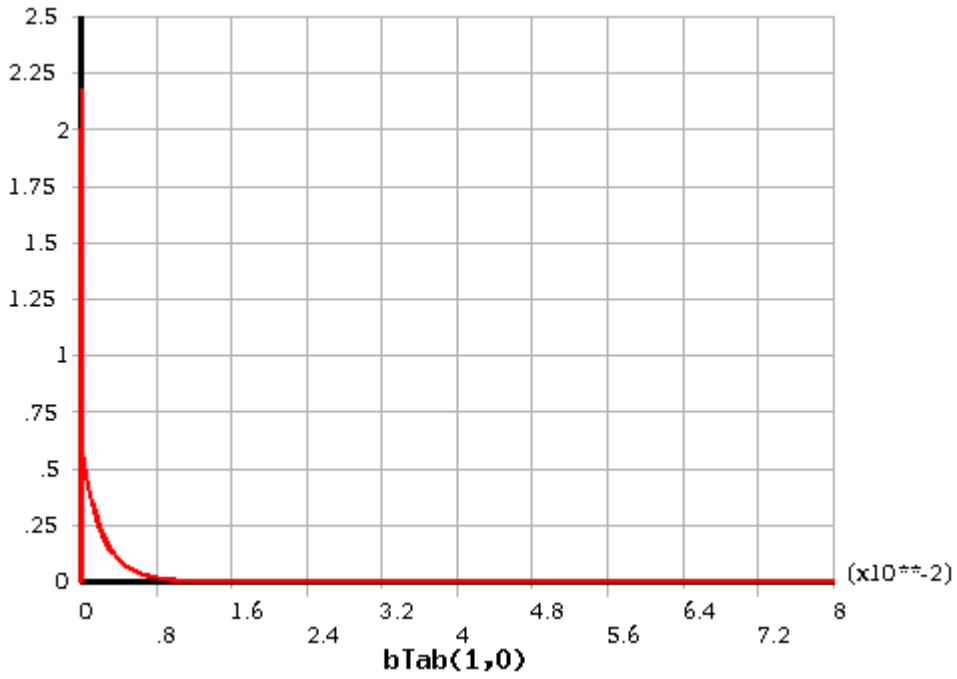
Magnetic results

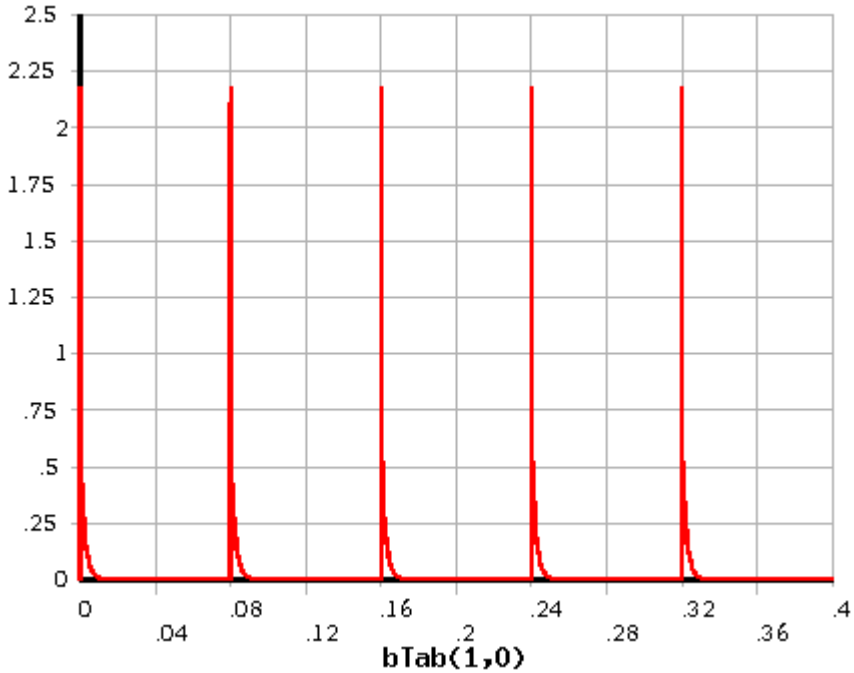
Max magnetic flux density[T], I_{max}=350[kA]



Magnetic results

Max magnetic flux density [T],
Half-sine current impulse, I_{max}=350[kA]

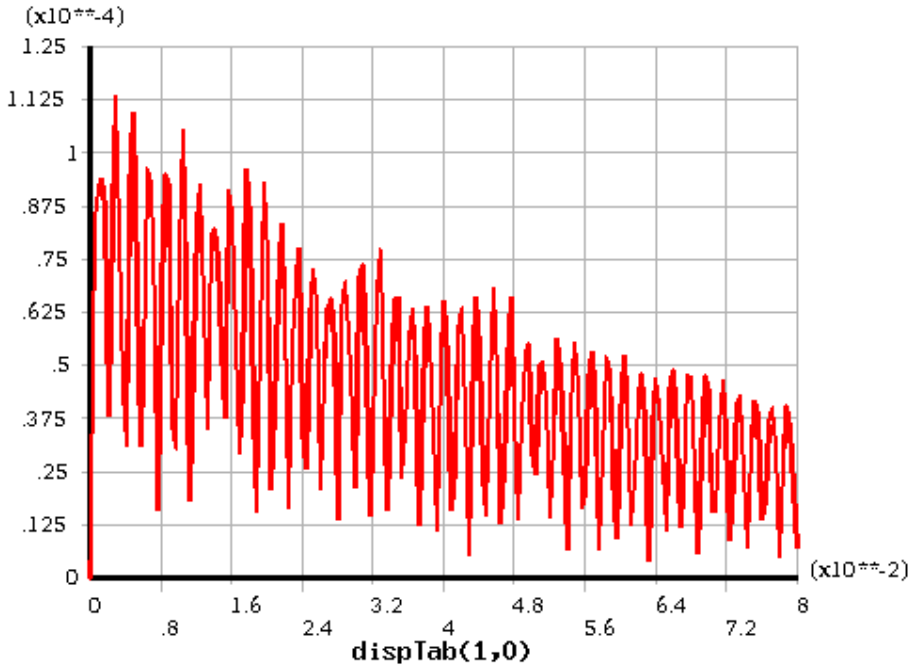




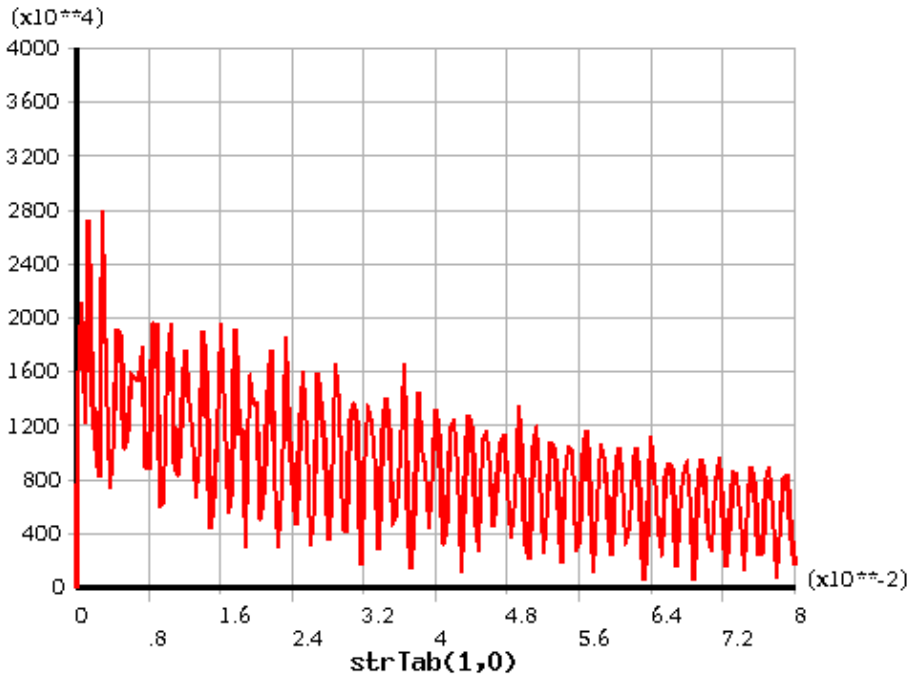
Structural results

Square impulse current, I_{max}=300[kA], ζ=0.02

Max Displacement [m]



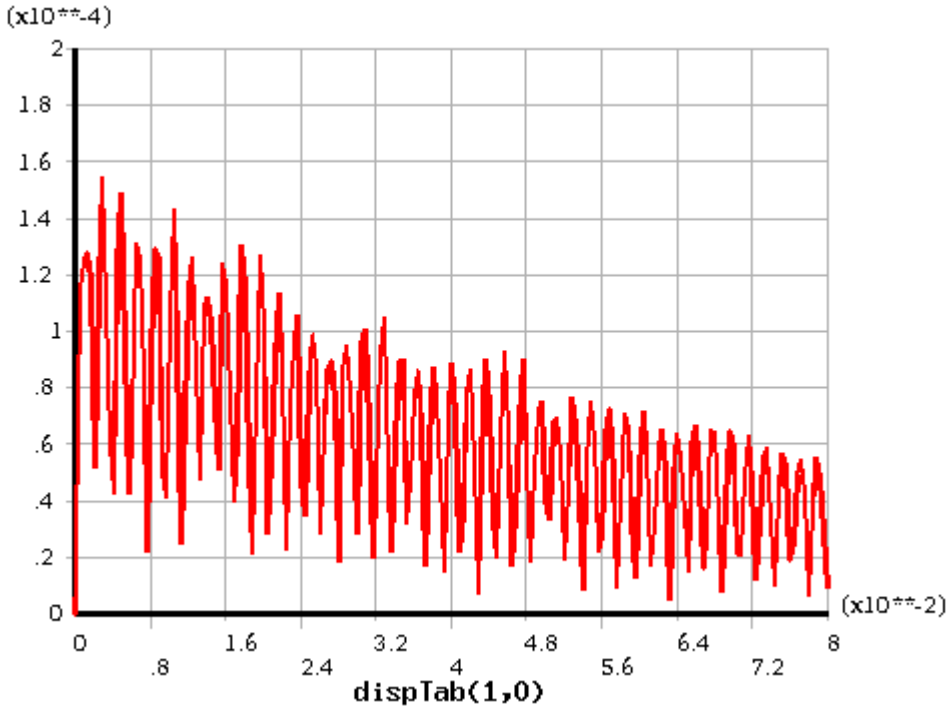
Max Stress [Pa]



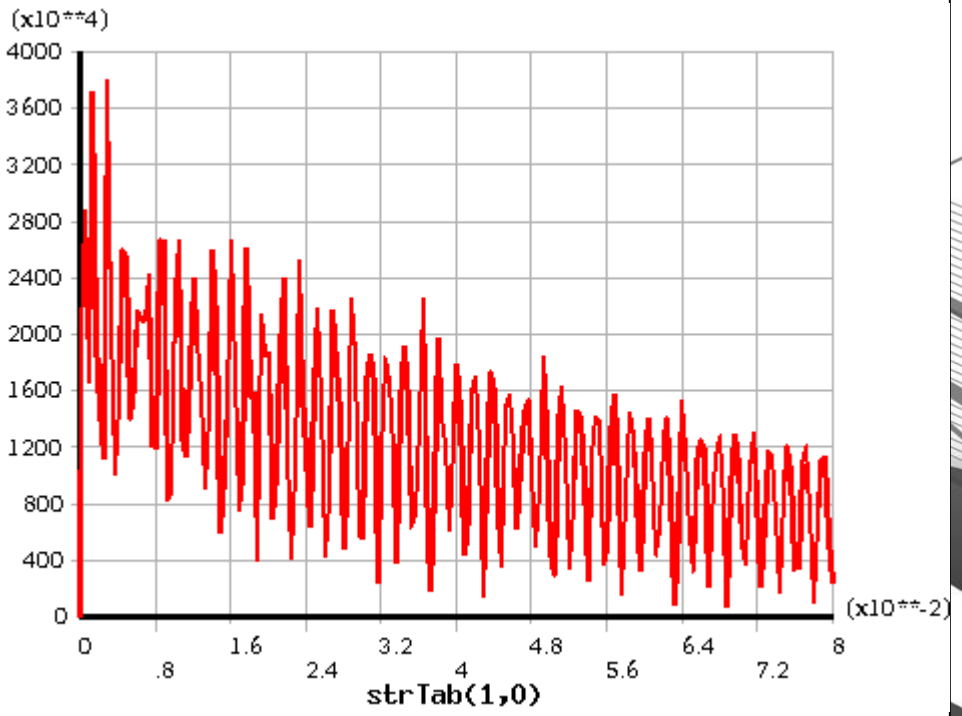
Structural results

Square impulse current, I_{max}=350[kA], ζ=0.02

Max Displacement [m]



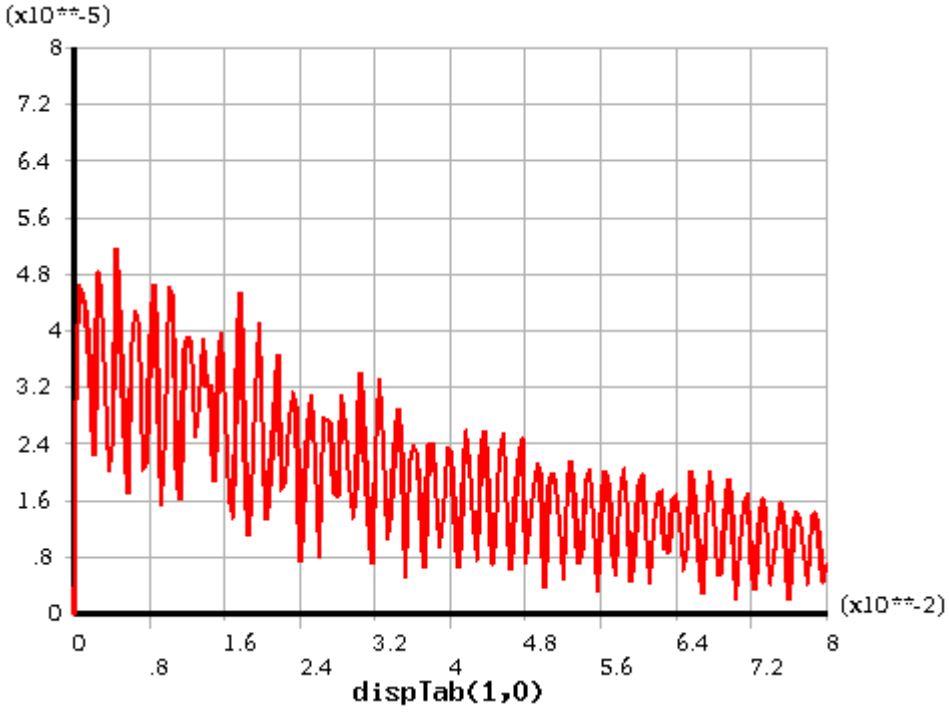
Max Stress [Pa]



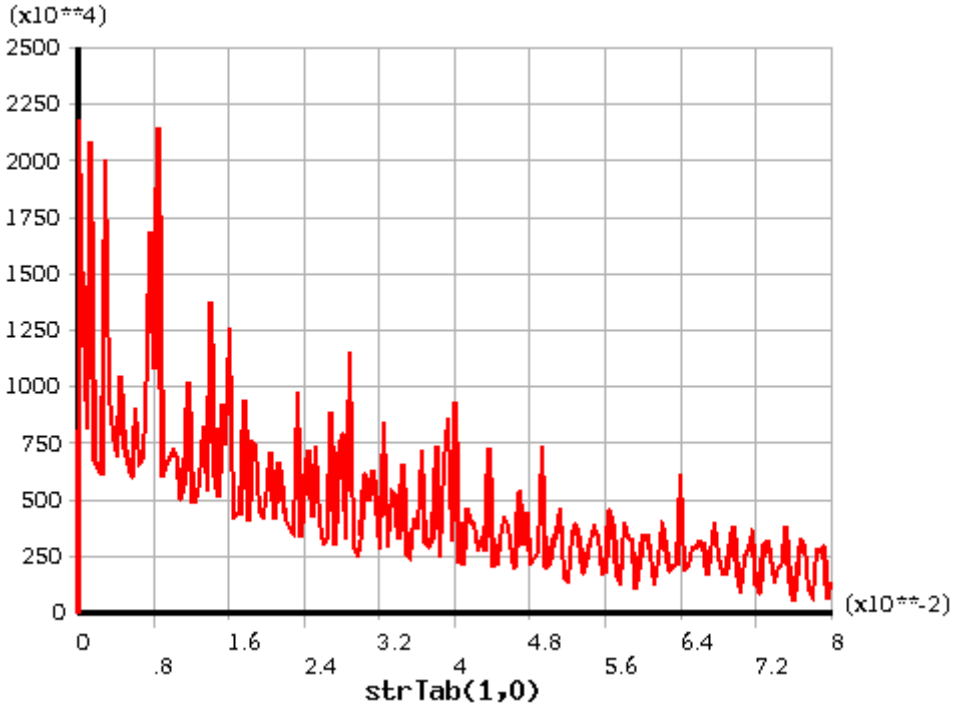
Structural results

Half-sine impulse current, I_{max}=300[kA], ζ=0.02

Max Displacement [m]



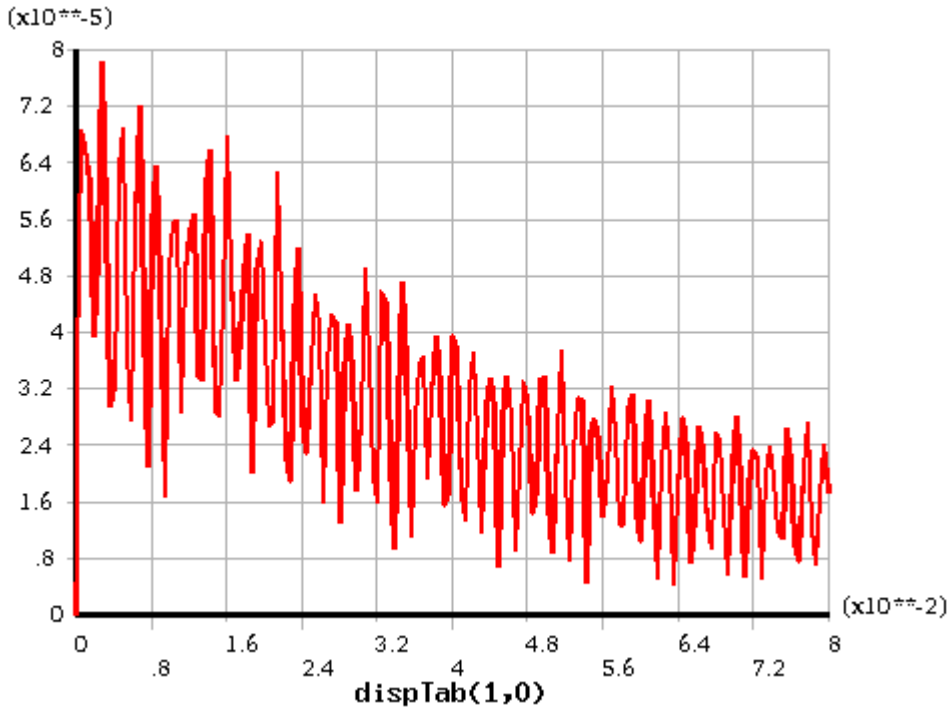
Max Stress [Pa]



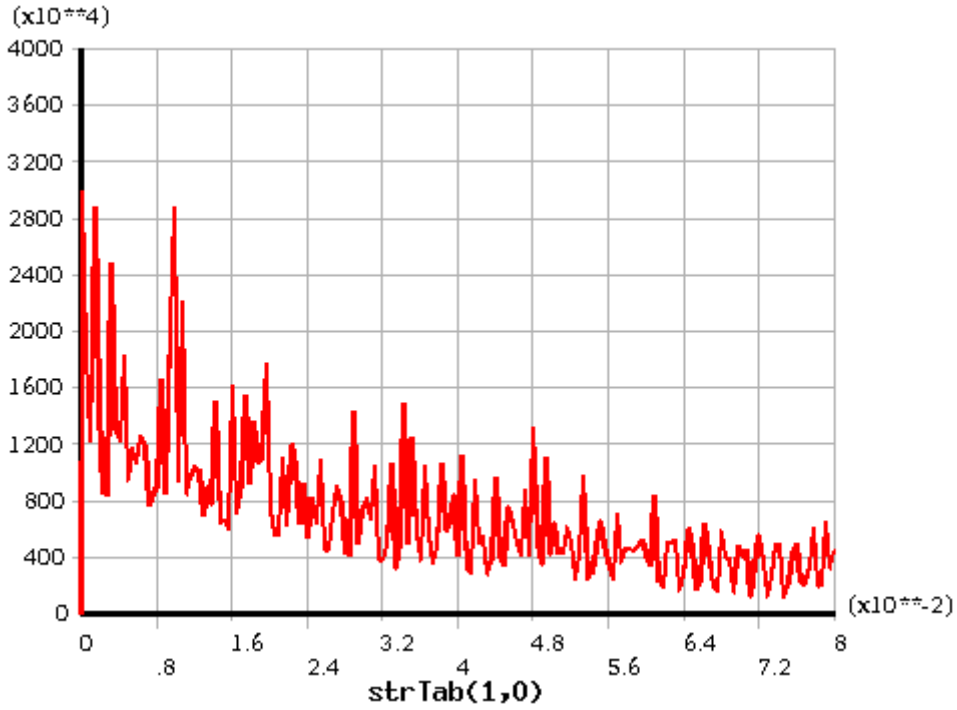
Structural results

Half-sine impulse current, I_{max}=350[kA], ζ=0.02

Max Displacement [m]



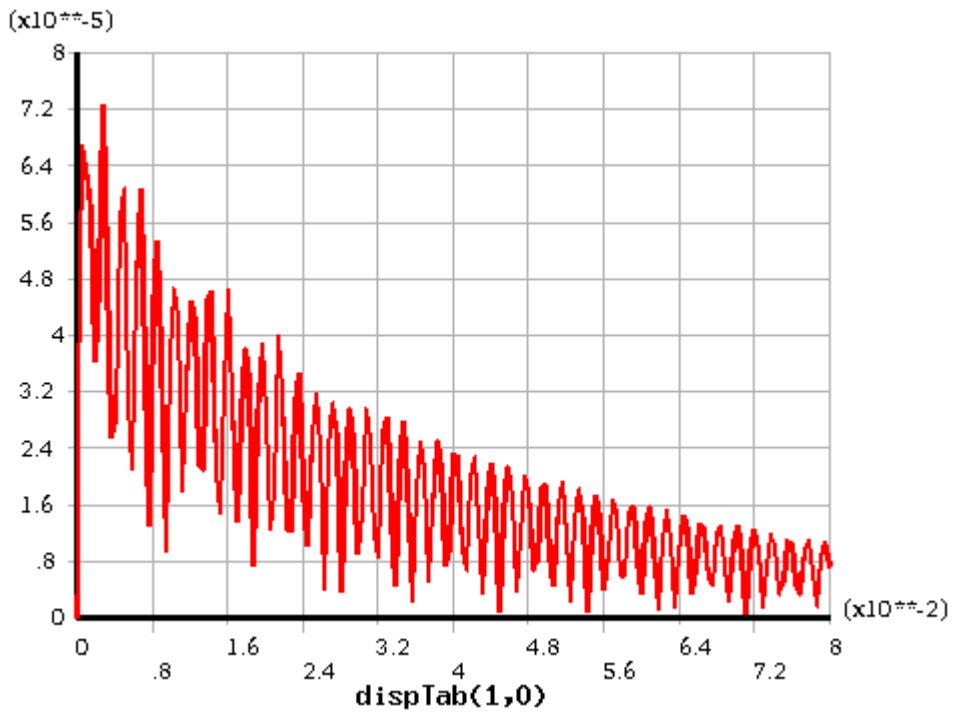
Max Stress [Pa]



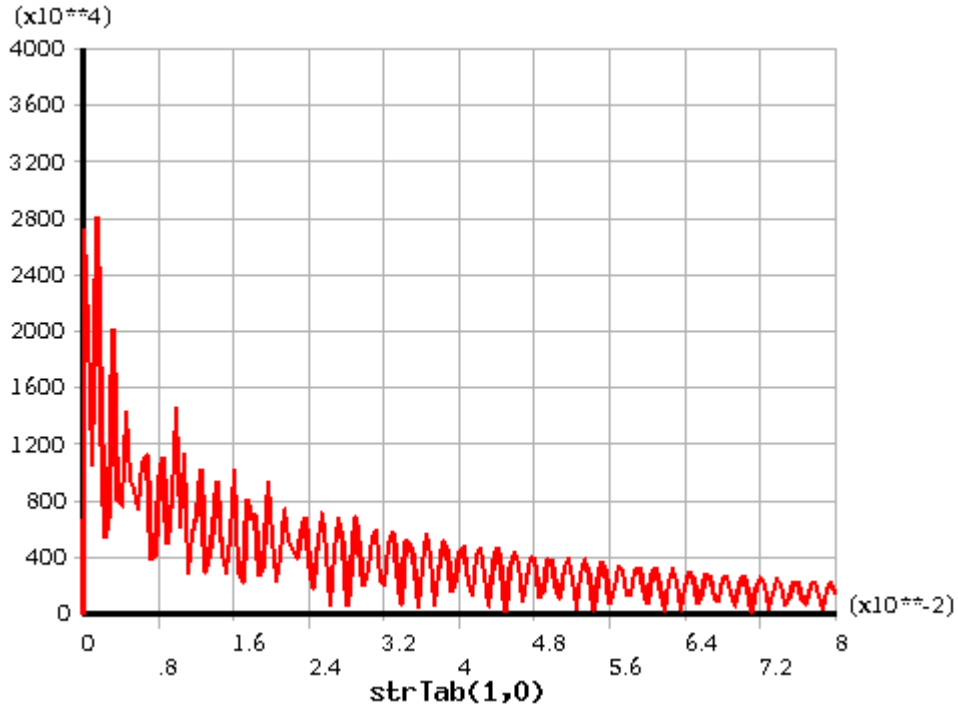
Structural results

Half-sine impulse current, I_{max}=350[kA], ζ=0.02,
(better damping of higher modes)

Max Displacement [m]



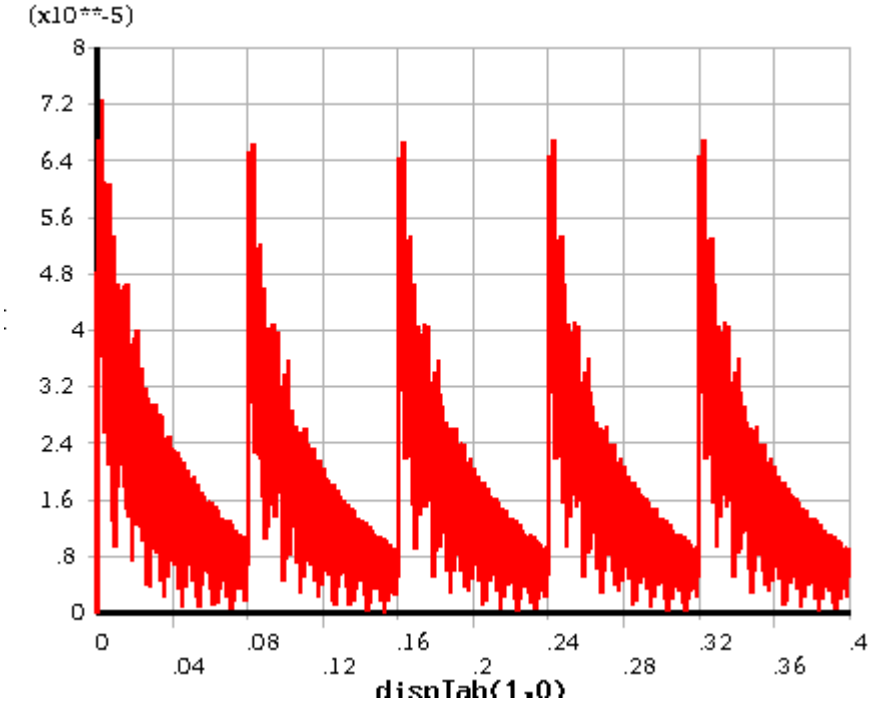
Max Stress [Pa]



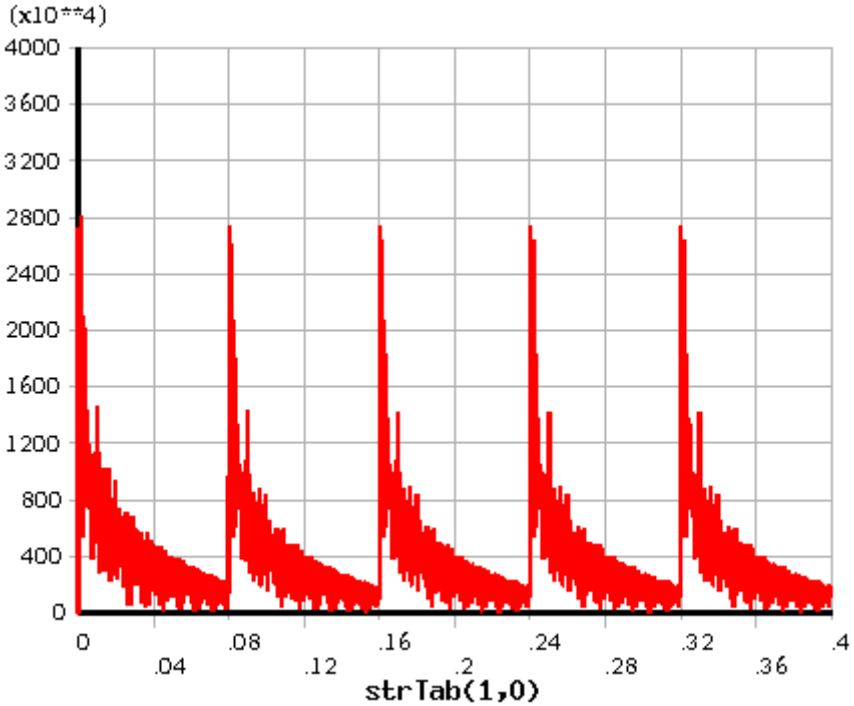
Structural results

Half-sine impulse current, I_{max}=350[kA], ζ=0.02, (better damping of higher modes) – 5 pulses

Max Displacement [m]



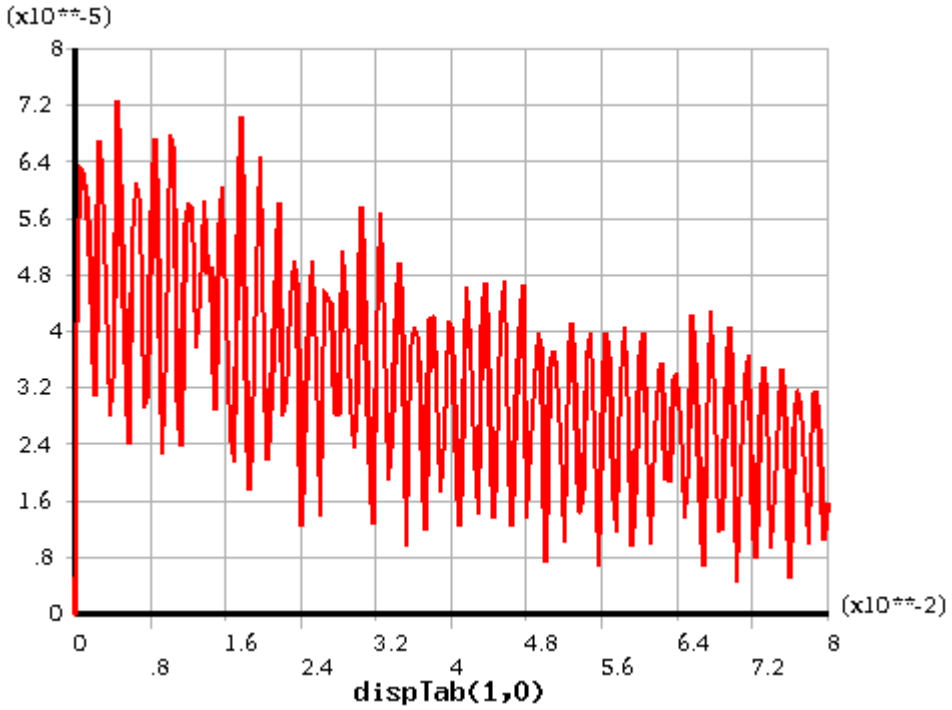
Max Stress [Pa]



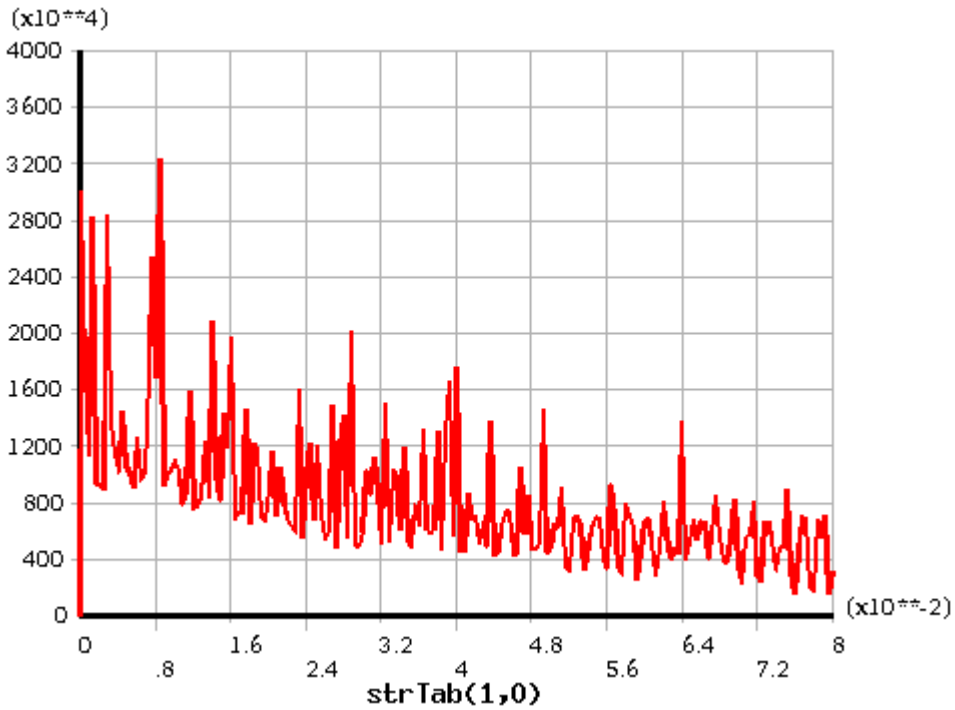
Structural results

Half-sine impulse current, I_{max}=300[kA], ζ=0.005

Max Displacement [m]



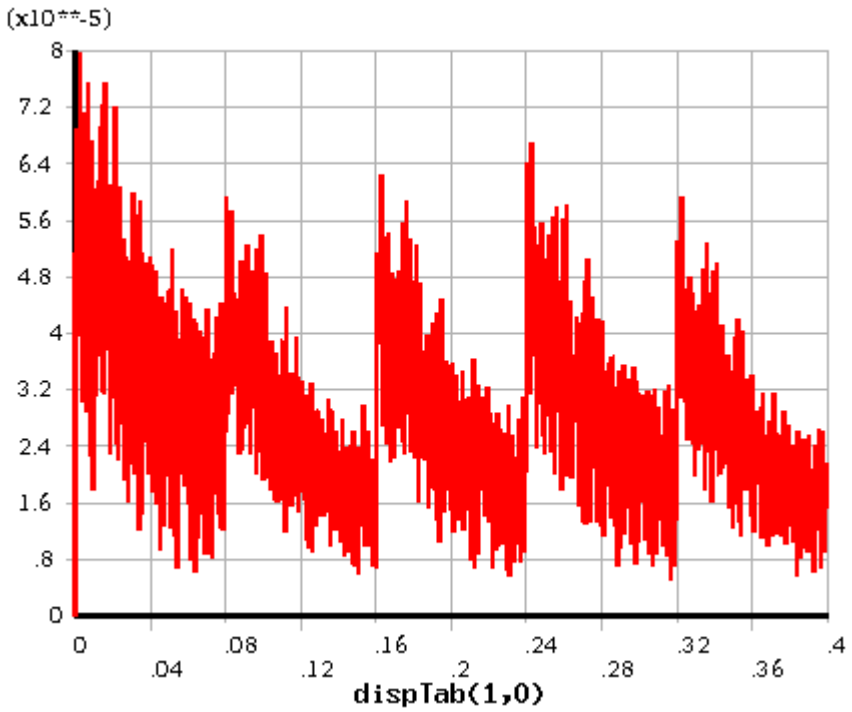
Max Stress [Pa]



Structural results

Half-sine impulse current, I_{max}=300[kA], ζ=0.005
5 pulses

Max Displacement [m]



Max Stress [Pa]