Comsol Guide Post_Processing

Laboratory Exercise in Computational Fluid Dynamics

To generate 2d (surface plot) or 1d (line plot) groups right click on the results tab.

Surface Plots

To make surface plots right click on a 2d plot group and choose the Surface tab. Use the expression tab to change which variable is shown by pressing expression --> replace expression.

Streamline Plots

To make streamline plots right click on a 2d plot group and choose the Streamline tab. Use the streamline positioning tab and impose uniform density with 0.01 separating distance.

Boundary Plots

To create line plots over boundary segments for field variables as well as derived quantities like stresses right click on a 1d plot group and choose the Line graph tab. Select the corresponding boundary segments for the plot and finally construct the diagram. Sometimes, one needs to hold down the Ctrl key while using the mouse pointer to choose different boundary segments from the display window, in order to make sure that multiple segments get simultaneously selected.

Wall Shear Stress Plots

To create wall shear stress graphs choose the Line graph tab and generate a new 1d graph plot. Insert as y-axis expression the (tr*spf.K_stressr)+(tz*spf.K_stressz) for the axisymmetric case, and (tx*spf.K_stressx)+(ty*spf.K_stressy) for the 2D case. Where (tr,tz) and (tx,ty) denote the unit tangent vectors, while (spf.K_stressr, spf.K_stressz) and (spf.K_stressx, spf.K_stressy) denote the force vectors per unit area on the specified boundary segment. The appropriate boundary selection for the plots can be done directly from the graphical display window.