ParaView is an open-source data visualization software. It can be downloaded from `http://www.paraview.org`. All comments that follow relate to the 5.50 version of this software and its use in this class.

Main documentation. The official tutorial for the software can be downloaded from the website mentioned above.

Input files. Results from the FE code are output using the VTK format that can be read by ParaView. Two ".vtk" files are output for each simulation. The first one named *my_simulation_0.vtk* corresponds to the initial configuration while *my_simulation_1.vtk* contains the results of the solution.

Menus and Controls. Here are a few helpful toolbars and panels to toggle on.

- Make sure the following toolbars are activated in the View → Toolbars menu:
  - Main Controls, VCR Controls, Current Time Controls, Active Variables Controls, Representation Toolbar, Camera Controls
- Make sure the following panels are activated in the View menu:
  - Pipeline Browser, Properties, Selection Display Inspector

Visualization. Here are the main steps to visualize the results of the simulation.

- Load both ".vtk" files at once via File → Open... and select *my_simulation_..vtk*.
- Select *my_simulation_** in the Pipeline Browser and click on the Apply button in the Properties tab.
- Select in the Active Variables Controls represented on Figure 1 the field to represent. Magnitude and component values are available for vector fields. Make sure the Surface representation type is selected.

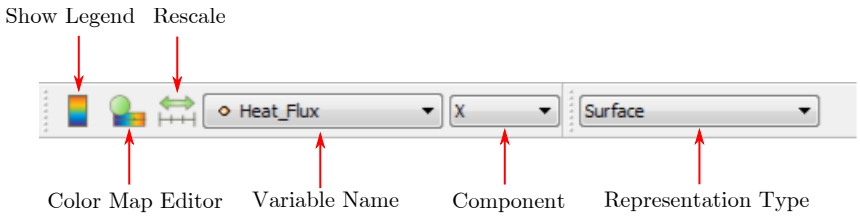

Figure 1: Active Variables Controls.

- Use the first and third buttons of the Active Variables Controls to show the legend and rescale it if necessary.
- Use the Time Controls represented on Figure 2 to switch between the initial to and final configurations. Doing so may require the legend to be rescaled.

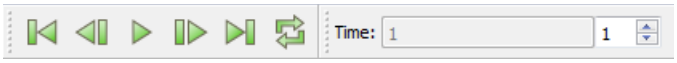

Figure 2: Time Controls.

- Snapshots of the figure can be saved via File → Save Screenshot...

Color parametrization. Here are a few color-related features to parametrize at the first use of the software.

- Background color: The background color can be changed via Edit → View Settings.... Set for example the Background Color in the list Solid Color of the General tab to white for a white background.
- Color map: The color map can be changed via View → Color Map Editor or the Color Map Button in the Active Variable Controls. Open the Choose preset panel represented by the icon in Figure 3 and choose for example Blue to Red Rainbow. Close the Color Map Editor panel.

Figure 3: Preset color map icon.

Field values. Here are the steps to access the element/nodal values of a given field.

- Select an element using the cell selection tool (keyboard shortcut "s") displayed on Figure 4 and located above the main view area.

Figure 4: Preset color map icon.

- Select in the Cell Labels or Point Labels lists in the Selection Display Inspector panel data to display for the selected element.

  Available mesh data are:

  - Cell Labels → ID: element number.
  - Point Labels → Nodes_ID: global node number. Note that the global node number is not given by Point Labels, ID.

  Available fields data are:

  - Cell Labels → material: material number.
  - Point Labels → : nodal fields from the FE solution.