

Data Structure

The results represent the experimental data of the velocity, static pressure, and vessel diameter measurements in the inlet and outlet cross sections as well as the vessel cross section. The inlet cross section is referred to by *CS1*, the vessel cross section by *CS2*, and the outlet cross section by *CS3*. Since cross sections *CS1* and *CS3* represent the inlet and outlet quantities, the results at these cross sections are considered as boundary conditions. The volume flux in *CS1* is determined by the piston pump whereas *CS3* is facing an open end. That is, the volume flux in *CS3* is a result of the fluid-structure interaction.

The experimental data is provided as matlab structure for each case, eg. 'ExpData-CaseB2.mat'. The structure is divided in data-sets (arrays) called Velocity, Structure, and Pressure which contain the data for each position, i.e. *CS1* (1), *CS2* (2) and *CS3* (3) for the Velocity data and 1,2,3, and 4 for the Pressure data, where 4 is the surrounding pressure. The data of each set covers 1 complete oscillation. With each data set a phase array is provided which contains the phase angle corresponding the time-steps of the data set. Since all data sets are synchronized this is not necessary. Structure and Pressure data set are 1D-arrays. The Velocity data sets is 2D and contains the velocity profile of each time step. Each profile consists of 1024 data points, from which all points exceeding the current flow diameter are NaN.

Units:

Velocity Data: m/s

Diameter Data: m

Pressure Data: mBar

Examples:

If you want to call the velocity profile of *CS2* at time step 200 of case B2:

```
load ExpData-CaseB2.mat
```

```
ExpData.Velocity.Velocity(2).mps(:,200)
```

If you want to plot the center line velocity of *CS2* at time step 200 of case B2:

```
load ExpData-CaseB2.mat
```

```
plot(ExpData.Velocity.Phase(1,:),ExpData.Velocity.Velocity(2).mps(512,:))
```