**FSI analysis for the flapping sheet**

Fluid flow is modeled using the **unsteady vortex lattice method (UVLM)**. A flexible sheet is modeled using the **finite element method (FEM)** with **absolute nodal coordinate formulation (ANCF)** for the shell element. This is done to reproduce the deformation of a plate while considering the spanwise deformation and geometrical nonlinearity.

**This code is for MATLAB R2007b – R2018a.**

[Step 1] Install the ToolBoxes

The following ToolBoxes in “./ ToolBoxes/” are required,

* “**Meshing a plate using four noded elements**” by KSSV

https://jp.mathworks.com/matlabcentral/fileexchange/33731-meshing-a-plate-using-four-noded-elements

* “**mmwrite**” by Micah Richert:

https://jp.mathworks.com/matlabcentral/fileexchange/15881-mmwrite

* “**Quiver** **5**” by Bertrand Dano:

https://jp.mathworks.com/matlabcentral/fileexchange/22351-quiver-5?s\_tid=FX\_rc3\_behav

* “**Sparse sub access**” by Bruno Luong:

https://jp.mathworks.com/matlabcentral/fileexchange/23488-sparse-sub-access

* “**TriStream**” by Matthew Wolinsky:

https://jp.mathworks.com/matlabcentral/fileexchange/11278-tristream

* “**Vectorized Multi-Dimensional Matrix Multiplication**” by Darin Koblick:

https://jp.mathworks.com/matlabcentral/fileexchange/47092-vectorized-multi-dimensional-matrix-multiplication?s\_tid=prof\_contriblnk

[Step 2] Start GUI form

Open the “GUI.fig” from MATLAB.

[Step 3] Start analysis

Push the “exe” button and wait until the finish of the analysis.

[Step 4] Plot results

Push the “plot” button.