

Title:

Fluid-Structure Interaction

People:

Dr. Charbel Habchi (charbel.habchi@ndu.edu.lb)

Collaborators:

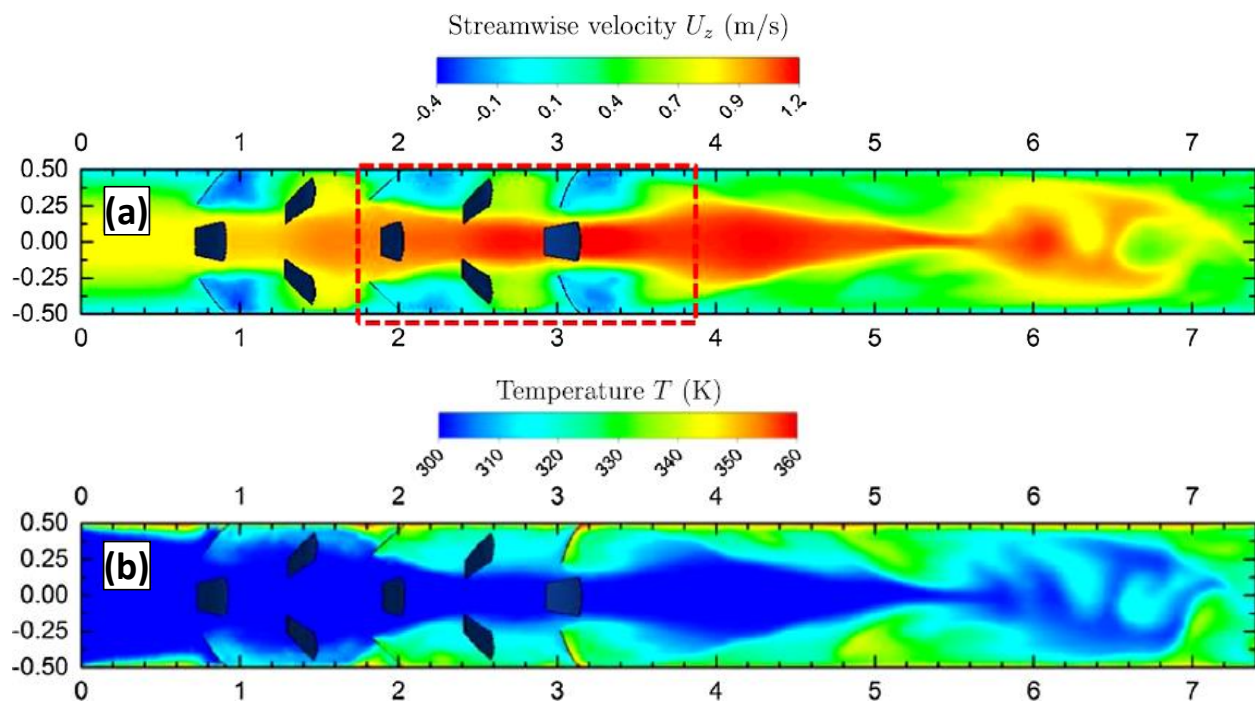
Dr. Samer Ali (Lebanese International University)

Grant:

Teaching Assistant

Short Description:

Instabilities such as vortex-induced vibrations (VIV), galloping and fluttering occur when a fluid surrounding a structure supplies energy to the structure instead of absorbing it. Usually, most of the studies in engineering disciplines intend to suppress such instabilities. In our project we will benefit from this instability to enhance the heat transfer and mixing processes by generating more vortices. The numerical studies are performed using coupled CFD-CSD solver with adaptive remeshing. The analysis of vortex shedding and its correlation to the structural oscillations and convective heat transfer is performed in order to intensify the convection and mixing processes.



(a) Streamwise velocity contour and (b) corresponding temperature distribution in a pipe symmetry plane fitted with 5 rows of trapezoidal vortex generators