

# Aeroelasticity

Lecture 6:

**Matlab Session – p-k method**

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# Matlab tutorial example

- Set up the p-k equations of motion for a pitching and plunging 2D flat plate.
- Write a code to solve the p-k equations
- Plot the variation of natural frequency and damping ratio with airspeed

# Parameter values

- You can choose your own system parameters or use the following:
  - $c=0.25\text{m}$ ,  $x_f/c=0.4$ , material=aluminium, plate thickness=0.02m
  - Uncoupled, undamped frequencies:
    - Plunge= 2Hz
    - Pitch=8Hz
  - Air density:  $\rho=1.225 \text{ Kg/m}^3$ .