

Aeroelasticity

Lecture 8: 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: $\rho=1.225\text{ Kg/m}^3$.