

FLOW INDUCED VIBRATION LAB

PURPOSE: The main purpose of this lab is to measure the flow induced critical speeds of two cantilever beams in water and to compare the measured speeds with theoretical speeds.

PROCEDURE: An accelerometer is used to detect the tip motion of each tube. Attach this to the round tube. Install the tube on the wave tank towing carriage frame. Connect the accelerometer and carriage speed indicator to an oscilloscope. Use a ramp run up the tank to record the main features of the tube vibration. Use constant speed runs to focus in on the motion at specific speeds. Attach rope in a spiral pattern to the tube and repeat the ramp run. Repeat all of the tests for the box tube.

REPORT: Calculate the critical speeds for the two tubes. Compare the theoretical speeds to the measured speeds. Also compare the theoretical periods of vibration to the measured periods. Comment on the results. Discuss sources of error.





