

1 Pressure and Velocity:

- 1 Plot time series (for 2 data sets)
- 2 Perform DFT (for 2 data sets)
- 3 Check the probability distribution for the data
- 4 Obtain Calibration equations (voltage vs. current, freq. vs velocity)
- 5 Calculate tunnel flow velocity from pressure
- 6 Calculate error/uncertainty in measurements
- 7 Derive transducer response characteristics for the tube length

2 Measurement System Behavior

- 1 Plot time series (for all data sets)
- 2 Perform DFT (for all data sets)
- 3 Check the probability distribution for the data
- 4 Obtain time constants (using Matlab only)
- 5 Derive theoretical expressions for response times and compare with experimental values
- 6 Calculate error/uncertainty in measurements

3 LVDT

- 1 Plot time series (for 2 data sets)
- 2 Perform DFT (for 2 data sets)
- 3 Check the probability distribution for the data
- 4 Obtain the calibration equation
- 5 Calculate error/uncertainty in measurements

4 Strain Gage

- 1 Plot time series (for 2 data sets)
- 2 Perform DFT (for 2 data sets)
- 3 Check the probability distribution for the data
- 4 Obtain the calibration equation
- 5 Compare experimental strain with theoretical strain (derive all necessary equations, see manual on website)

6 Calculate error/uncertainty in measurements

5 Temperature Measurements

- 1 Plot the time series for all data sets
- 2 Obtain time constants (using Matlab only)
- 3 Compare theoretical and experimental step response behavior
- 4 Calculate error/uncertainty on measurements

6 Flow Measurements

- 1 Derive equations for mass flow rate measurements for this setup
- 2 Obtain mass flow measurements for pipe diameters.

10 – Unacceptable

20 – Poor

30 – Weak

40 – Low Average

50 – Average

60 – High Average

70 – Good

80 – Excellent

90 – Outstanding

100 – Truly Exceptional