Compact, Solid-State Laser Doppler Velocimeters (LDV)

- Measurement Attributes:
  - High spatial resolution (10^1 – 10^2 microns typical)
  - Rapid temporal resolution (≈100K samples/sec)
  - Simultaneous multi-component capability
  - Can be directionally resolved

  ⇒ Applicable to measurement of turbulent spectra

- Development Approach:
  - Utilization of semiconductor diode laser sources or diode-pumped solid-state lasers
  - Compact optics for cavity isolation and mode matching
  - Low noise, fiber pigtailed avalanche photodiode detectors with matched preamplifiers
  - Component separation by wavelength discrimination or frequency domain encoding
  - Dedicated, high-speed signal processing using DSP architectures
  - Logical progression is to MEOMS-based devices