

# Spectro Throughput Measurement

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DESI Spectrograph FDR  
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**Dark Energy Spectroscopic Instrument**

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- Measure the spectrograph's end-to-end, full system throughput
- Measuring the spectro throughput is possible during/after the acceptance tests at Winlight
- Throughput measuring system is installed for measurement at the spectrograph slit 'parking' position.

- Proposed procedure :

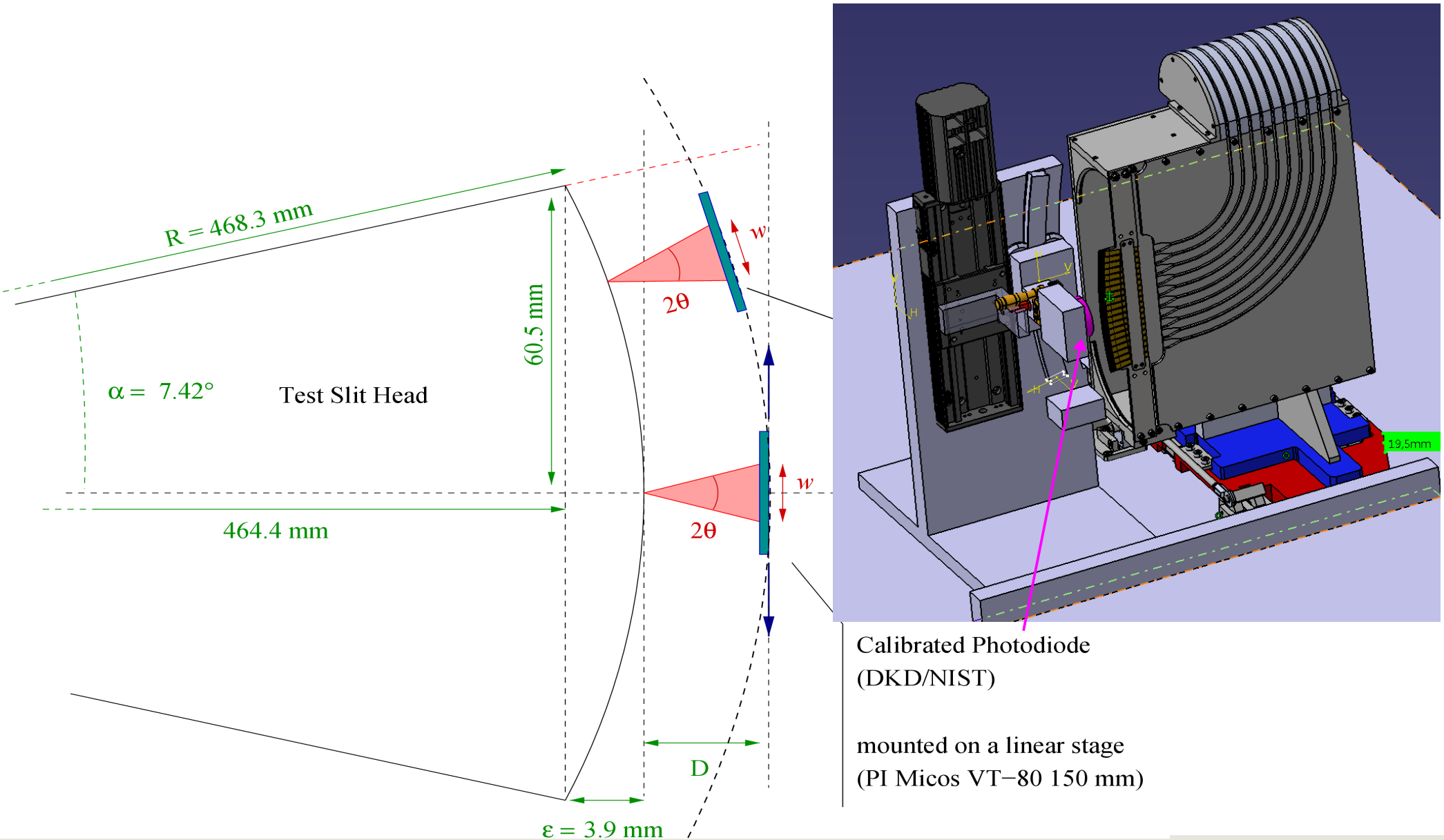
Data taken with various illuminations setups (flux ramp, wavelength scans)

- With test slit in the spectro → measure on 3 CDDs
- With test slit out of the spectro → measure flux from given fiber/block with calibrated photodiode



# Spectrograph Throughput Measurement

## Mechanical Design Drawing



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# Calibrated photodiodes (2 available)

- MD-37-SU100 calibrated (spectral sensitivity)
  - DKD certified absolute calibration
  - A few % on 250 – 1100 nm.
  - Size : 100 mm<sup>2</sup>
- Photodiode current readout : electrometer  
Keithley 6514, or better 6482 (2 channels)



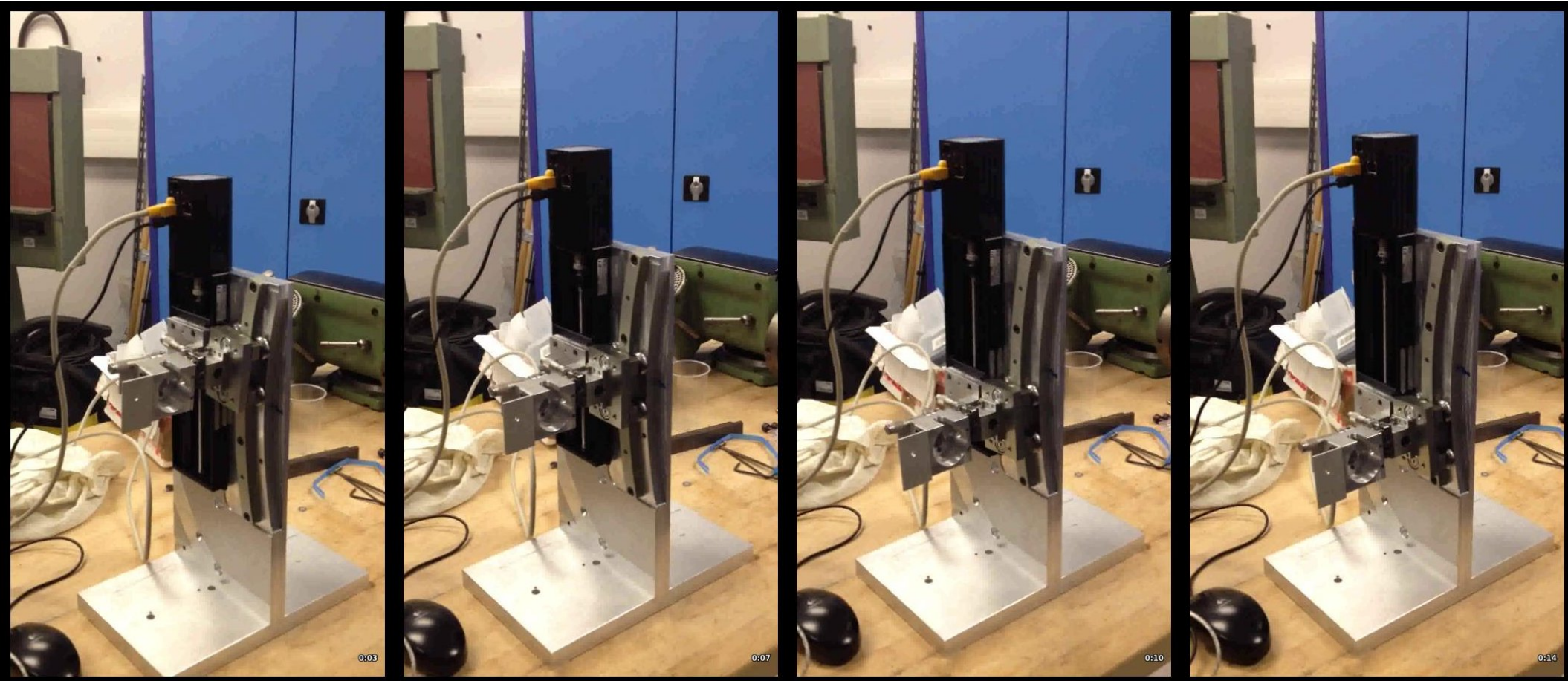
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# Spectrograph Throughput Measurement

## Realization

- Full mechanical system ready
- Mechanical integration on OHP test bench coming soon
- Software integration started



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# Conclusion / perspectives

- Mechanical system design and realization done ✓
- Calibrated photodiodes available ✓
- Dual channel Keithley electrometer available ✓
- Software integration with OHP test bench *On going*
- Coming up :
  - Mechanical integration on OHP test bench
  - Move to Winlight (with OHP testbench)
  - Data taking
  - Data analysis

