Development of full-field deflectometry for characterization of free-form mirrors for space applications

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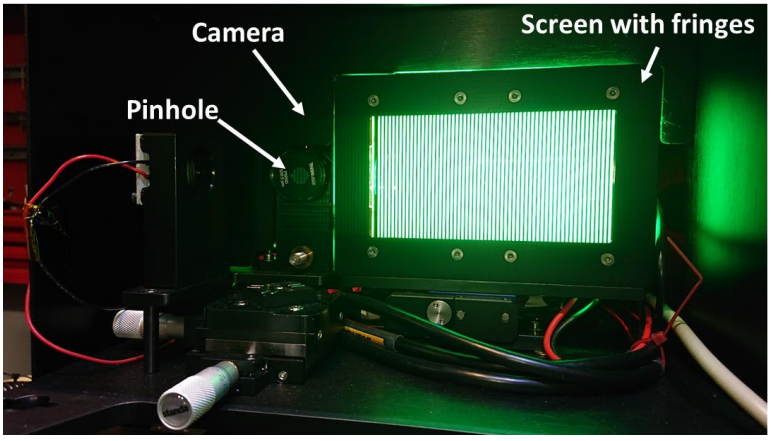
2 fullfield deflectometers for 2 types of mirrors

Freeform mirrors

- In situ measurement
- Characterization of small mirrors or subaperture stichting
  - FOV: Ø=30mm
  - Angular acceptance: ±2°
- Fullfield deflectometry
  - Phase-shifting Schlieren
  - Measurement of the slope maps along 2 perpendicular directions
- Instrument
  - Fringe projection system with fast SLM at the focal plane of the projection lens
  - Telecentric imaging system
- Output
  - Absolute reconstruction of the shape of the mirror
  - Characterization of residual waviness
- Easy to use
  - Very simple alignment
  - No calibration
- Cost effective

Large concave mirrors

- Characterization of large concave mirrors
  - FOV>30°
  - Working distance: validated from 300mm to1000mm
- Fullfield deflectometry
  - Measurement of the deformation of a fringe pattern
- Instrument
  - 5” fringe display with custom backlight
  - Imaging system
  - Illumination & imaging systems are calibrated
  - Phase-shifting method
- Absolute reconstruction of the shape of the mirror
  - Iterative algorithm
- Easy to use
  - Very simple alignment
  - No calibration
- Cost effective



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