

PFIS-FP Calibration Ring Reduction

Scheme for night-time ring measurement and on-line calibration update

- 1) Frequency

Normally done at the beginning of an observation. For long tracks and/or high wavelength precision, may be repeated multiple times during a track.
- 2) Information needed from Data Base (or elsewhere?)
 - a. X2 Y2 A2 B2 (for TF or LR modes)
 - b. X1 Y1 A1 B1 (additionally for MR or HR modes)
 - c. Calibration F value
 - d. Spectral line wavelength
 - e. Minimum and maximum radii to fit in low resolution
 - f. Additionally for high resolution, max and min radii to fit
 - g. Flat field name (from a list of pre-measured flats)
 - h. PFIS Filter
 - i. PFIS camera focus position (or offset)
 - j. Calibration lamp and ND filter
 - k. Central wavelength for etalons
 - l. CCD exposure time
 - m. CCD Xbin and Ybin factors
 - n. Tolerance on the HR or MR mode A value
- 3) Procedure
 - a. Configure PFIS
 - i. FP mode (articulation 0, gratings and polarizers removed)
 - ii. Set camera focus, using 2i
 - iii. Insert desired filter, using 2h
 - iv. Load FP_Global, using 2a and 2b
 - b. Configure calibration system
 - i. Insert screen
 - ii. Select lamp and ND filter, using 2j
 - c. Configure Etalon 2 (low resolution etalon)
 - i. Insert etalon 2
 - ii. Set etalon 2 wavelength, using 2k
 - iii. Retain Z2 for use below
 - d. Issue calibration exposure command to PDET
 - i. Pass exposure time (2l), binning factors (2m), flat filename (2g), fit max and min radii (2e)
 - ii. Receive radius and error flag
 - iii. On error, abort and complain to the SA.
 - e. Calculate new A value
 - i. $A = (1 + (R^2/F^2))^{1/2} * \text{_line} - B * Z$
 - ii. Using 2a, 2c, 2d, and 3ciii
 - f. Update FP_Global A2 value
 - i. Possibly apply a sanity check, either in code or by SA
 - g. If TF or LR mode, exit normally

- h. Configure Etalon 1 (MR or HR etalon)
 - i. Insert Etalon 1
 - ii. Set etalon 2 wavelength, using 2k
 - iii. Set etalon 1 wavelength, using 2k
 - iv. Retain Z1 for use below
- i. Issue calibration exposure command to PDET
 - i. Pass exposure time (2l), binning factors (2m), flat filename (2g), fit max and min radii (2f)
 - ii. Receive radius and error flag
 - iii. On error, abort and complain to the SA
- j. Calculate new A value
 - i. $A = (1 + (R^2/F^2))^{1/2} * _line - B * Z$
 - ii. Using 2b, 2c, 2d, and 3hiv
- k. Update FP Global A1 value
 - i. Possibly apply a sanity check, either automatically or by SA
- l. If A1 changed by more than tolerance 2m, iterate to 3h
- m. Exit normally