SQWG3-PM3: WP2150 Improved polarisation key data

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Approach

- On-ground calibration data re-analysed, based on improved polarisation equations (verified with extra lab measurements)
- Consistent solution for limb + nadir + ambient scanner calibration
- Status:
- Results previously presented by Thijs
- Polarisation keydata tested by IUP



Refractive index update

- Polarisation key data used for new analysis of m-factors
- M-factors for sub-solar, limb, extra mirror, and ESM diffuser
- Refractive index n and k (for each pixel wavelength)
- ESM, ASM, ESM diffuser contaminant thickness (for each time)
- Extra fit parameters: t=0 m-factor (for each wavelength)
- Extra fit parameters: OBM m-factor for each time/wavelength
- (Calculations still running, but already very good results)



RMS fit residuals for all m-factors



Sub-solar m-factor + fit, example





Limb m-factor + fit, example



Limb + extra mirror m-factor + fit, example



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ESM diffuser m-factor + fit, example



Refractive index, real part



Refractive index, imaginary part



Status

- Polarisation key data allow good m-factor fit
- No suspicious polarisation features in refractive index
- Fit residuals dominated by other instrumental features (etalon, non-uniform detector degradation, non-uniform mirror contamination?)
- Mirror model needs no update
- New contaminant refractive index and layer thicknesses can be provided
- Documentation for contaminant still rudimentary

