Image quality of HMI

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HMI flatfield

*Three different ways of obtaining the flatfield:*

- Large scales: Spacecraft offpoint (or leg) flatfield (see Kuhn, Lin, & Loranz 1991, PASP)
- Medium scales: PZT flatfield
- Small scales: Rotational flatfield (see: Wachter & Schou, Solar Physics 2009)
Front camera flatfield

Offpoint flatfield

PZT flatfield
Side camera flatfield

Offpoint flatfield

PZT flatfield
Flatfield accuracy

Large scale flatfield: $\approx 1\%$ estimated from residuals

*on ground*: Vignetting

*in space*: Doppler shift due to spacecraft motion, Solar Activity

PZT flatfield: $\gtrsim 0.2\%$ estimated from simulations

Photon Noise, Interpolation Errors

Rotational flatfield: $0.1\%$ estimated from MDI high-res data

temporal changes of granulation and solar activity
Dust specs

Front camera

Side camera
Field curvature

Field curvature: Field dependence of the Focus

- Focus gradient from bottom to top: \( \approx 0.5 \) steps for side camera
- Focus gradient from left to right: \( \approx 0.0 \) steps
- Field curvature from center to edge: \( \approx 0.4 \) steps
MTF

Combined Stim Tel and Instrument:
Strehl ratio: 0.8
Main uncertainty:
Air currents, Jitter

MTF for best focus
Point spread function from Phase Diversity Measurement

MTF front camera
cuts through PSF
MTF in Orbit

In space:
Phase diversity measurements

Eclipse
# Camera alignment

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