SO/PHI data request form

(Cruise phase + first science orbit; SO/PHI-Team internal version)

Small-scale internetwork magnetic structure and the diffuse QS corona

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MPS

Science case (stay on one slide):

Please also state, why is PHI needed; why is the science unique?

- In the quiet Sun, the corona as seen in EUI/HRT/174 shows not only small-scale brightenings, the campfires, but also comparably large regions with very smooth appearance. In analogy to the background seen in active regions, this could be termed diffuse corona. Organized in patches of a few to several 10 Mm in size it is unclear how these unstructured features are driven energetically. One possibility could be the (interaction of) network and internetwork fields or emergence and braiding of the flux within the internetwork. Comparing extrapolations of the magnetic field with the spatial distribution of the diffuse corona will reveal some first hints on the magnetic connectivity. The combination of EUI and PHI is a key: the high resolution of EUI is needed to distinguish small isolated brightenings from the diffuse corona and with matching resolution PHI will then reveal the magnetic structure below. Following the evolution of the magnetic patches at the surface level should give insight into how the magnetic dynamics could drive these diffuse coronal features.

Requirements/data (use additional slide if needed)

Besides best guess requirements, you may also list minimum requirements on the data

- Type of solar feature: **quiet Sun**
- HRT or FDT: **HRT**
- Physical parameters needed (available: B_LOS, vector B, v_LOS, I_c, raw data): **B_los, I_c**
- Total length of observation: **1 hour**
- Cadence (maximum 1 dataset/min): **1 min**
- Pointing needs (disc centre, limb, active region location, particular μ): **QS @ disk center**
- Orbit needs (spatial resolution/co-rotation/angle to Earth/angle to other spacecraft): **0.3 AU (resolution)**
- Total number of datasets: **60**
- Full frame 2k x 2k or partial frame 1kx1k, 0.5kx0.5: **full frame (to maximize FOV)**
- Full resolution or 2x2, 4x4 binned data: **full resolution**
- noise level (default 10^{-3}): ???
- Co-observations with other instruments: EUI/HRI/174; EUI/HRI/Lya; SPICE (for thermal context of diffuse corona)
- Special requests: