SO/PHI data request form

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

Relationship between the Ca II K brightness and the magnetic field strength using SO/PHI in combination with Rome/PSPT

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Science case (stay on one slide):

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

- Close relationship between Ca II K brightness and the magnetic field strength is known, but the exact form differs among the various studies and is particularly uncertain at higher B/μ.
- Such a relationship is important for, e.g., recovering the evolution of the solar magnetic field on decadal-centennial time scales from historical Ca II photographs, which is, in turn, important for solar irradiance reconstructions, understanding solar influence on climate and understanding brightness variability of Sun-like stars.
- Observing simultaneously the same regions on the Sun from different viewing angles, SO/PHI and Rome PSPT (also using magnetograms from SDO/HMI) offer a unique opportunity to better constrain this relationship.

Requirements/data

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

- Type of solar feature: faculae/network/QS
- HRT or FDT: FDT and HRT
- Physical parameters needed (available: B_LOS, vector B, v_LOS, I_c, raw data): B_LOS, I_c
- Total length of observation: 5-10 minutes daily or every few days throughout the whole window
- Cadence (maximum 1 dataset/min): 1 dataset/min
- Pointing needs (disc centre, limb, active region location, particular μ): SW+PW: around disc center, NW: westward of disc centre (has to see parts of the Sun that would be seen by PSPT close to limb)
- Orbit needs (spatial resolution/co-rotation/angle to Earth/angle to other spacecraft): SW + PW more important; if available, data from the cruise phase would also be helpful
- Total number of datasets: ~ 1 set/min x (5-10 min/day) x (10-30 days) ≈ 50 – 300 sets
- Full frame 2k x 2k or partial frame 1kx1k, 0.5kx0.5: full frame
- Full resolution or 2x2, 4x4 binned data: full
- noise level (default 10^{-3}): default
- Co-observations with other instruments: Rome PSPT (Kanzelhöhe can be used as a back-up in case of bad weather)
- Special requests: (1) see pointing needs; (2) SO/PHI data taken CET mornings (e.g. 08:30-14:30 UT) are preferrable