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

Flows around active regions

Roth (PI), Strecker, Calchetti, Schunker, Waidele

KIS, IAA, MPS, UoN, KIS

Science case (stay on one slide):

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

- Active regions often exhibit flows in their surroundings. The moat flow around a sunspot is a prominent example. These flows might play a relevant role in the physics of the formation, stability, and evolution of active regions.

- Less is known about the sub-surface structure of these flows. Measuring the advection of acoustic waves by the flow will allow to conclude on the structure of such flows below the surface with helioseismic methods.

- Observations with PHI provide stable observation conditions with higher spatial resolution to resolve the spatial dependence of the flows, which are not available for a long time on the ground or from another instrument in space.

- In case co-observations from the ground with other lines are available, the height dependence of the flows could be further investigated.

- *If not possible in the first orbit, we would be happy to have these observations in the second orbit (North window in November 2022)*

Requirements/data   (use additional slide if needed)

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

- Type of solar feature: Sunspot

- HRT or FDT: HRT

- Physical parameters needed (available: B_LOS, vector B, v_LOS, I_c, raw data): v_LOS, vector B, I_c

- Total length of observation: minimum 12 hours (if possible 24 hours)

- Cadence (maximum 1 dataset/min): 1 dataset/min

- Pointing needs (disc centre, limb, active region location, particular μ): active region location

- Orbit needs (spatial resolution/co-rotation/angle to Earth/angle to other spacecraft): if possible angle to Earth, then co-observations from ground could be possible. If not, still important science can be done.
  Resolution needs at least 250km/pix at a large FOV of minimum 300 Mm.
  These conditions are probably achieved in the second orbit, too.

- Total number of datasets: 720 - 1440

- Full frame 2k x 2k or partial frame 1kx1k, 0.5kx0.5: full frame

- Full resolution or 2x2, 4x4 binned data: full resolution

- noise level (default 10^{-3}): 10^{-3}

- Co-observations with other instruments: if angle to Earth is available then co-observations with VTT HELLRIDE and/or SST CRISP should be arranged.

- Special requests: None