SO/PHI data request form

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

The horizontal to vertical displacement ratio of solar oscillations

Jesper Schou

MPS

Science case (stay on one slide):

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

- One of the basic quantities that has never been directly measured in helioseismology is the (complex) ratio of the horizontal to vertical displacement of the p- and f-modes. Indirect measurements have been made by Schou & Bogart (1998), Rhodes et al. (2001) and others. Unfortunately the measurements are model dependent and with data from a single vantage point only, the inferred ratio is entangled with the height dependence, leaving significant uncertainties.
- Observations with PHI will allow us to make a direct measurement and to cleanly disentangle these two effects.
- With a good understanding of these effects we will improve our understanding of an important part of the mode physics near the solar surface. Also it will hopefully allow us to reduce some of the systematic errors currently plaguing helioseismic measurements.

Requirements/data (use additional slide if needed)

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

- Type of solar feature: Full disk.
- HRT or FDT: FDT
- Physical parameters needed (available: B_LOS, vector B, v_LOS, I_c, raw data): V_LOS, ideally also I_c
- Total length of observation: At least 24 hours.
- Cadence (maximum 1 dataset/min): 1/min
- Pointing needs (disc centre, limb, active region location, particular μ): N/A (full disk)
- Orbit needs: Large overlap with Earth view. At least ~15 degrees off Earth-Sun line.
- Total number of datasets: At least 24 hours (1440 datasets)
- Full frame 2k x 2k or partial frame 1kx1k, 0.5kx0.5: Full disk. Slight limb cutoff acceptable.
- Full resolution or 2x2, 4x4 binned data: Resulting solar diameter of at least 500 pixels
- noise level (default 10^{-3}): Default should be fine, no polarimetry
- Co-observations with other instruments: HMI. Should preferably avoid eclipse seasons.
- Special requests: This is intended to be covered with the 2021 and 2022 HS runs.