SO/PHI data request form

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

Ring-Diagram analysis of SO/PHI data

Kaori Nagashima

Max Planck Institute for Solar System Research

Science case (stay on one slide):

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

- Systematic variations of the “flow signals” with the disk position are reported in various helioseismology studies; they are generally larger than the subsurface meridional flow signals. (Zhao et al. 2012, Komm et al. 2013, 2015)
- Systematic variations depend on the observables/instruments.
- Physical causes of the systematics are still unclear.
  - due to the formation height difference with the position? (Baldner and Schou 2012)
- Simultaneous observations of the areas on the Sun from different angles with SO/PHI and SDO/HMI (or ground-based instruments, e.g., GONG) would be the unique opportunity to improve our interpretation of the center-to-limb variation, and hence, to improve the helioseismology technique in general.
- We would like to do the ring-diagram helioseismology analysis using the full disc SO/PHI data, especially the overlapped areas with SDO/HMI.

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 disc***
- HRT or FDT: ***FDT***
- Physical parameters needed (available: B_LOS, vector B, v_LOS, I_c, raw data): ***v_LOS (if possible I_c as well)***
- Total length of observation: ***>24hr***
- Cadence (maximum 1 dataset/min): ***1 dataset/min***
- Pointing needs (disc centre, limb, active region location, particular μ): ***disc centre***
- Orbit needs (spatial resolution/co-rotation/angle to Earth/angle to other spacecraft): ***Need a significant field-of-view and temporal overlap with SDO/HMI (or ground-based telescopes).***
- Total number of datasets: ***> 1440***
- Full frame 2k x 2k or partial frame 1kx1k, 0.5kx0.5: **1kx1k or smaller,** ***as long as (almost) full solar disc is covered***
- Full resolution or 2x2, 4x4 binned data***: full resolution (solar diameter > 500 pixels)***
- noise level (default 10^{-3}): ***default is ok***
- Co-observations with other instruments: ***SDO/HMI (or ground-based telescopes, e.g., GONG)***
- Special requests: ***We would like to use the data obtained during the helioseismology runs in January 2022 for this analysis.***