

SO/PHI data request form

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

# Longitudinal and transversal oscillations with stereo observations

Daniele Calchetti

MPS

# Science case (stay on one slide):

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

- Oscillations in magnetic elements and in sunspots have been studied for decades. Only few studies (e.g. Stangalini et al 2013 for magnetic elements) tried to investigate the interaction between longitudinal and transversal waves by using tracking algorithm to measure the horizontal displacements.
- With PHI we will be able to study for the very first time this oscillations from a different vantage point. This opportunity must be exploited by performing stereo observations in order to detect velocity and magnetic signals of the same region observed from the Earth.
- This observation can reveal the interactions between different wave modes and any relation to magnetic field oscillations or inclination in small magnetic elements and in active regions. Multi-line observation could also be used to study the propagation through the atmosphere of these waves.

# Requirements/data (use additional slide if needed)

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

- Type of solar feature: QS, Sunspot if available
- HRT or FDT: HRT
- Physical parameters needed (available: B\_LOS, vector B, v\_LOS, I\_c, raw data): I\_c, Vlos, Bvect (raw data if possible)
- Total length of observation: at least 1 hour (best: > 2h)
- Cadence (maximum 1 dataset/min): 60 s
- Pointing needs (disc centre, limb, active region location, particular  $\mu$ ): Depending on the angle to the Earth
- Orbit needs (spatial resolution/co-rotation/angle to Earth/angle to other spacecraft): Angle to the Earth ~20-60 degrees
- Total number of datasets: at least 60
- Full frame 2k x 2k or partial frame 1kx1k, 0.5kx0.5: min: .5k x .5k, best: full frame
- Full resolution or 2x2, 4x4 binned data: Full resolution
- noise level (default  $10^{-3}$ ):  $10^{-3}$
- Co-observations with other instruments: best: High resolution telescope and instruments with spectropolarimetric capability at high cadence and high sensitivity (CRISP, IBIS, GRIS, GFPI, HELLRIDE, HINODE SOT, ...); min: HMI
- Special requests: Possible off-pointing for stereo observation. If the requirements cannot be satisfied, I would be happy to have this observation during the second orbit.