

Timestamp: 3/23/2016 22:10:11

Title of Proposed Observation:

Pore Study to Search for MHD Waves

Main Objective:

I'd like to acquire a time series of a small- to medium- sized pore with SP data to see if there are any oscillations of the magnetic field strength, inclination, intensity or area that could be indicative of MHD waves in the photosphere.

Scientific Justification:

MHD waves are thought to be a likely candidate for transporting heat in the solar atmosphere. The layer in which we can most successfully observe, ie, the photosphere, is also the layer in which the MHD wave amplitudes are small and mode-mixing and conversion of different types of waves makes observations messy. Nevertheless, it is important to utilize what is our best spectro-polarimeter (SOT SP) available to the solar physics community to determine if the amplitudes of the MHD waves in the photosphere really are too small to be detected, as predicted by theory. We have acquired two nice data sets for time series (15 step fast map rasters) in sunspots in the last year and half using HOP 272. It would be excellent to run this type of observation with pores as targets since the weaker field strengths and smaller wave guides of pores will provide a distinctly different environment for wave propagation.

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Co-Proposer name(s):

Co-Proposer email(s):

SSC Point of Contact: SOT -- Dick Shine (LMSAL)

Dates: ToO

Time window: Any (2 hours)

Target(s) of interest:

ToO : Pore or naked sunspot

First run during week of 3/28 - 4/3

Second attempt during 4/16 - 4/30

*As close to disk center as possible or within ~35 degrees of disk center

*Observations during the 11-15 UT time period.

*3x 1 hour long observations of very fast map

SOT Requests:

*Target of Opportunity observations of a pore.

* Very Fast Map observing mode (similar to HOP 243 with 9 arcsec wide FOV and 73 sec cadence) using both sides of CCD. SP 0x15b

*DURATION: 1 hours

*REPEATS: 3 x with +/- 5 arcsec offset of X in order to have a better chance of pointing at small pore

*Height along the slit should be 82 arcsec minimum to allow accurate removal of drifts.

*Perhaps reset correlation tracker every hour or two as the stability might be worth the 1.5 minute data gap. ?

EIS Requests:

None.

XRT Requests:

None.

IRIS Requests:

Yes, we would like co-temporal observations with IRIS if possible. What was run with HOP 272 (similar to this but with sunspots as targets) was an OBS of 3620257130 or 3820257177 (?).

A large 8 step sparse raster (1" steps, i.e., not a full spatial coverage) with 4s exposure times. That would lead to a raster scan that covers 8"x 120" with a raster cadence of 43 seconds. To boost the signal-to-noise of the FUV spectra, we could sum those by 2 in the spectral dimension. This will give C II, Si IV and Mg II h/k slit jaw images with a cadence of 21 seconds for each of the filters.

Additional instrument coordination:

None.

Previous HOP information:

HOP 272, run 2x, Oct 11 2014 and Oct 17 2015

*poster presentation at Hinode meeting in Belfast Sept, 2015

*oral presentation at Dynamic Sun meeting in Varanasi, India, Feb, 2016

*colloquium at LMSAL in March 2016

*manuscript in preparation

Additional Remarks:

This is somewhat similar to HOP 169 requested by Erdelyi and colleagues. I see that it was only run once and can not find the results from the observations.