

Multi-messenger Heliophysics with DKIST, PSP and SO: Origin and Acceleration of the Solar Winds – Session #2

Speakers - Sue Lepri, Chen Shi, Tom Schad, David Verscharen

Organizers - Mark Rast, Lucas Tarr, Thomas Rimmele, Valentin Pillet, Stuart Bale, Teresa Nieves-Chinchilla, Gianna Cauzzi, Kevin Reardon, Chris Gilly

Full session description is in a googledoc, please see link in:

<https://solarnews.nso.edu> -> Past issues-> June1 -> **“SHINE 2022 Multi-Messenger session”**

GOAL: define science objectives and the observing strategies that leverage the capabilities of the missions to meet them, and to identify groups of collaborators

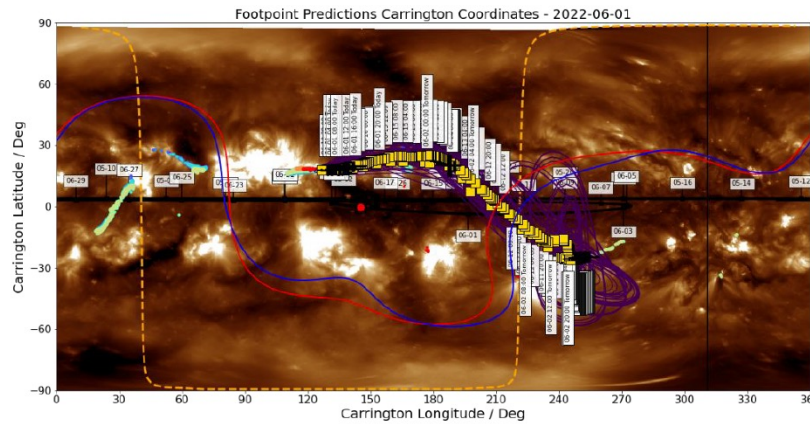
- 1) What are the current most compelling open questions about the origin and acceleration of the solar wind plasma?
- 2) How can the unique capabilities of DKIST, PSP, and SO be combined to address these?
- 3) What specific sets of coordinated observations will be most useful?

First test of coordinated observations (corona shown here, on disk observations also discussed)

DKIST/CryoNIRSP observations during Perihelion (31 May/1 June)

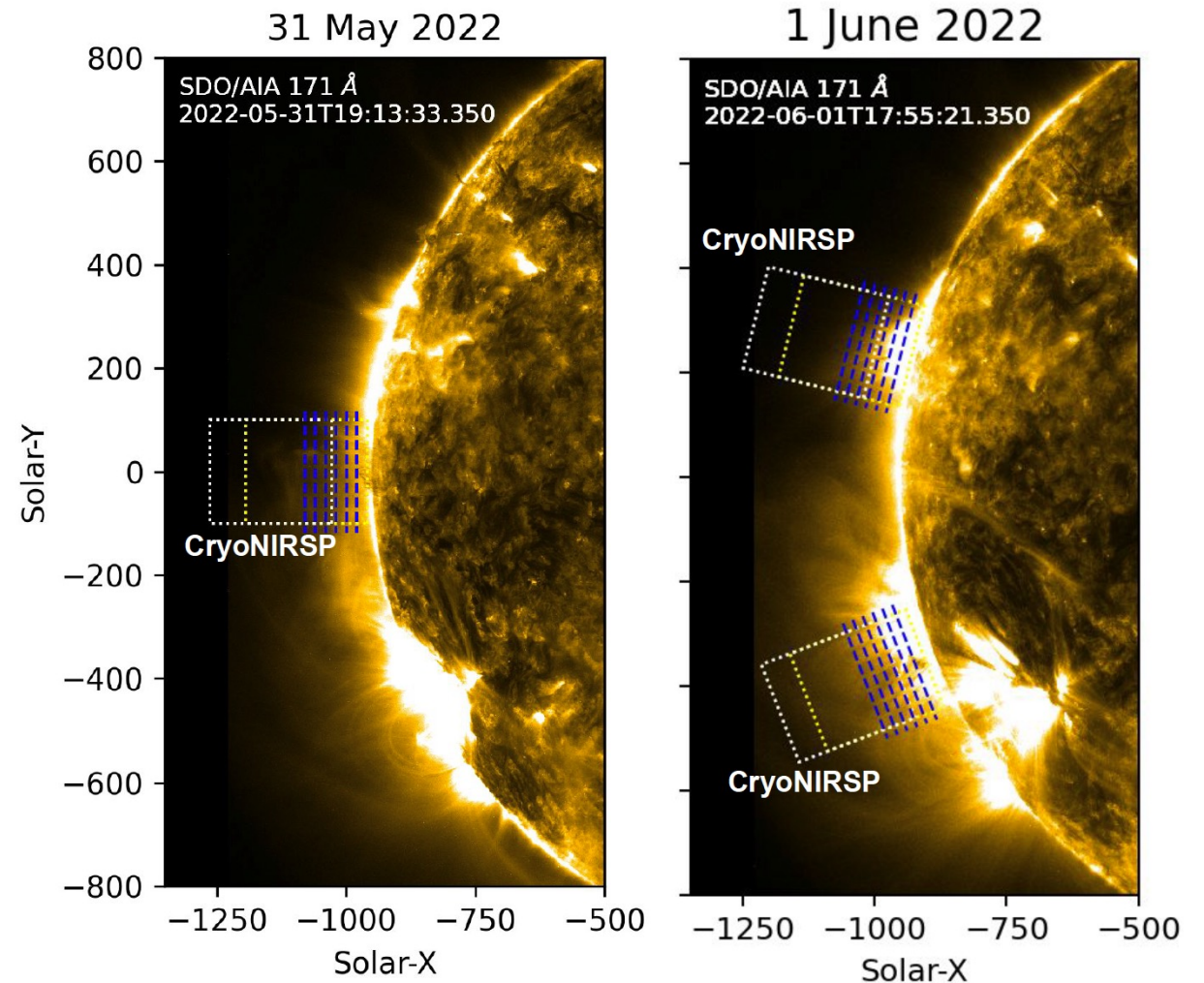
Experiment design:

- Sequential Fe XIII 1074/1079 nm spectral observations for electron density ratios.
- Fe XIII 1074 nm spectropolarimetry
- He I 1083 nm context imager polarimetry
- Combinations of 200" x 230" rasters + coarse/deep polarimetric rasters to increase SNR



DKIST Targeting:

- Footpoint predictions from N. to S. hemispheres
- 31 May (UTC-10): Maximize overlap with SO
- 1 June (UTC-10): Cover N + S active bands



Courtesy of DKIST

Key science topics that could be addressed with combinations of these facilities

1. Origin of switch backs
2. Power in Alfvén waves as a function of radius/height
3. Constraining the coronal magnetic field using quadrature observations (SO to Sun to Earth)
4. Composition in the low corona

Idea is to continue discussion and planning in working groups

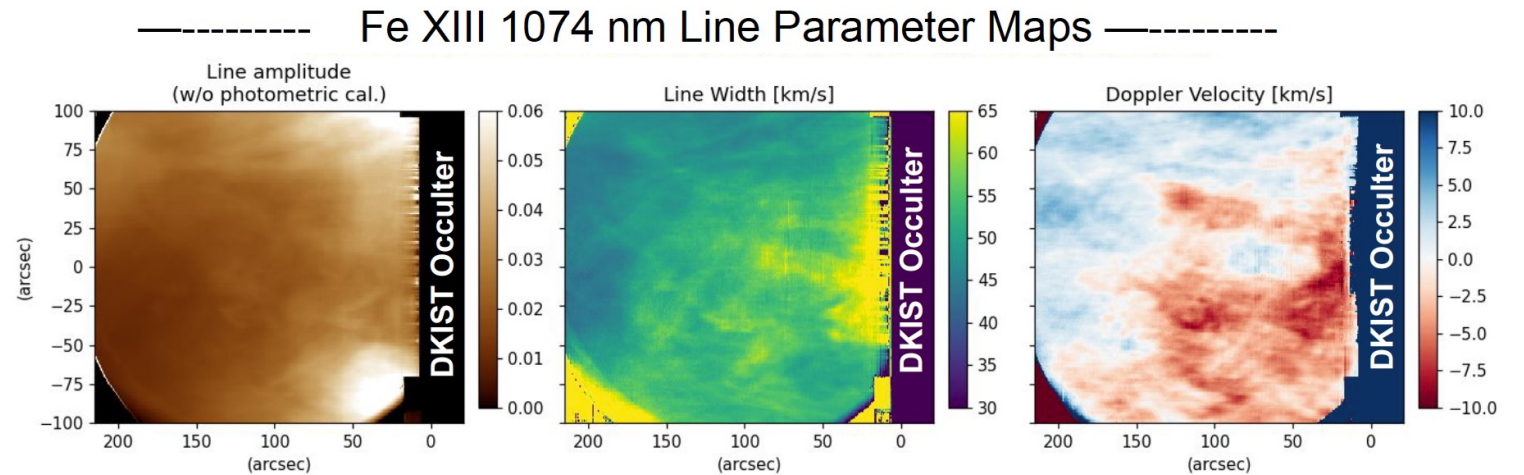
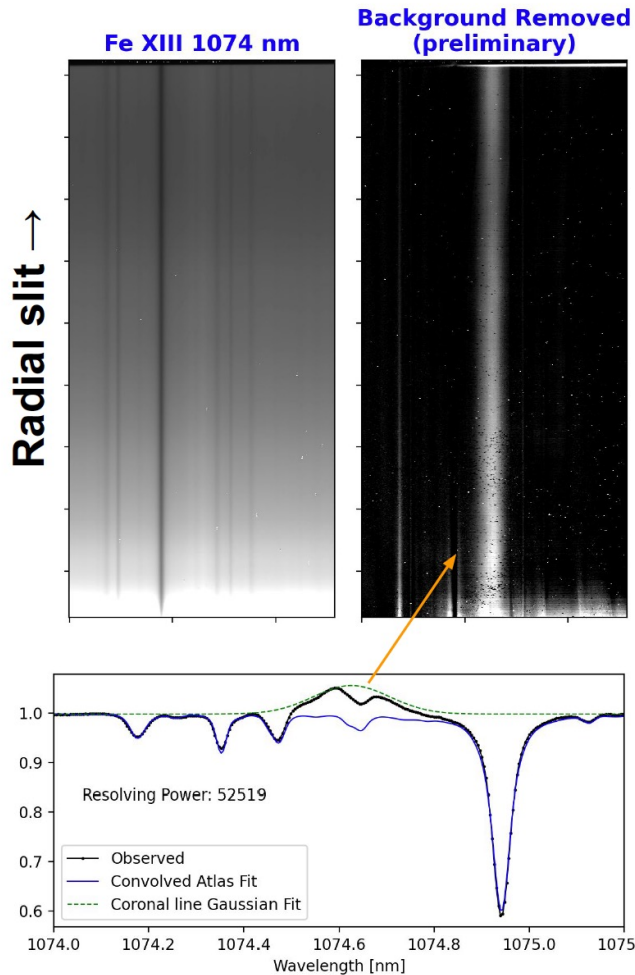
Email Mark Rast: mark.rast@colorado.edu

- If these topics are exciting to you (especially early career!), please get involved
- These are not meant to be exclusive
- Continuing discussion after this session is essential
- Progress can be made on these problems even before fully coordinated and synchronous observations are made

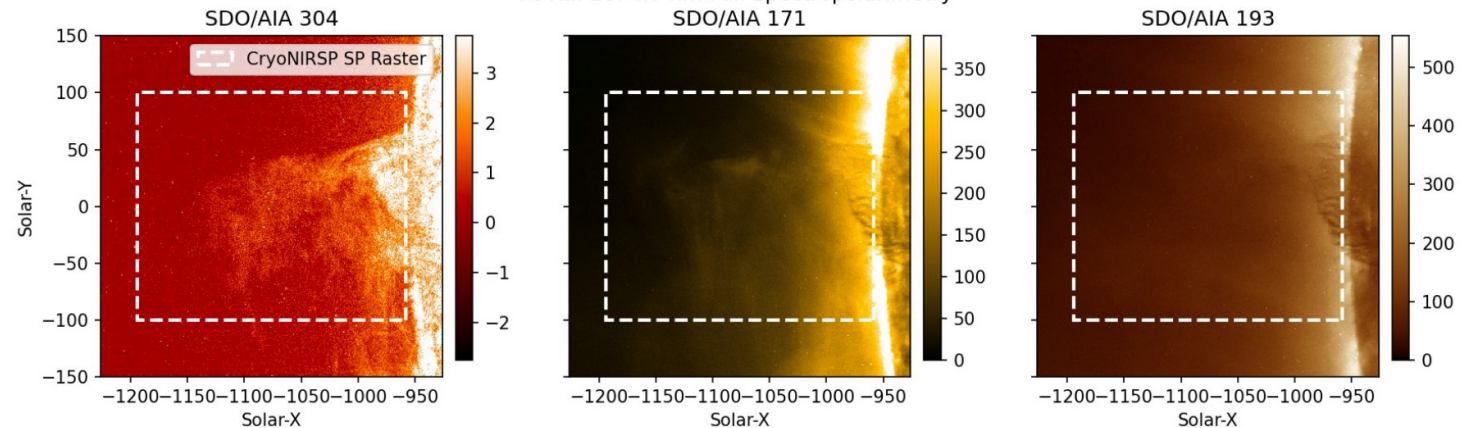
Additional slides

Very preliminary Expectation is to make them publicly available after full calibration

A first look at the CryoNIRSP coronal data - 31 May 2022 - Equator



CryoNIRSP Raster Start Time: 2022-05-31T19:13:21.025
200 step raster | 0.5 arcsec slit width | 1 arcsec step size
Fe XIII 1074.7 nm Full Spectropolarimetry



Courtesy of CryoNIRSP Instrument Team doing the calibrations

DKIST Cycle 2 Proposals

Please come to the town hall with the DKIST directory Thomas Rimmele on Thursday afternoon

Cycle 2 Proposal Call Announcement

The DKIST Cycle 2 Proposal Call has opened (June 8, 2022).

Proposal Submission Deadline: August 8, 2022 (23:00 GMT)

The National Science Foundation's (NSF) Daniel K. Inouye Solar Telescope (DKIST) is pleased to solicit Proposals for Operations Commissioning Phase (OCP) Cycle 2 observations. The OCP Cycle 2 observations will start after the proposal review and experiment generation phases are completed in winter 2022/2023.

For this second OCP Proposal Call the available on-Sun time (i.e. the time available for observations) will be limited and balanced against technical project needs.

Proposers are asked to carefully read and use the full description of the Call for Cycle 2 Proposals [PDF] for the planning and preparation of their Proposals.

These are challenging times and we ask for patience from the community since as any dates may change significantly. Updates will be provided by the project as the situation evolves.

Important Dates

The schedule for DKIST OCP Cycle 2 is as follows and is subject to change:

Activity	Date/Time
Release of Proposal Call	June 8, 2022



Related

- [Current Proposal Call \[PDF\]](#)
- [Previous Proposal Announcements](#)
- [DKIST Proposing Overview](#)
- [Proposal Preparation and Submission](#)
- [Proposal Review and Selection](#)
- [FIDO](#)
- [DKIST Instruments](#)
- [Operations Commissioning Phase](#)
- [DKIST Data Access Policy](#)
- [Accepted Science Programs](#)
- [DKIST Data Center Overview](#)

TOOLS

- [Proposal Architect Tool | Proposal Architect Manual](#)
- [FIDO/DHS Tool & Manual Zip File](#)
- [VSO IPC Tool & Manual Zip File](#)