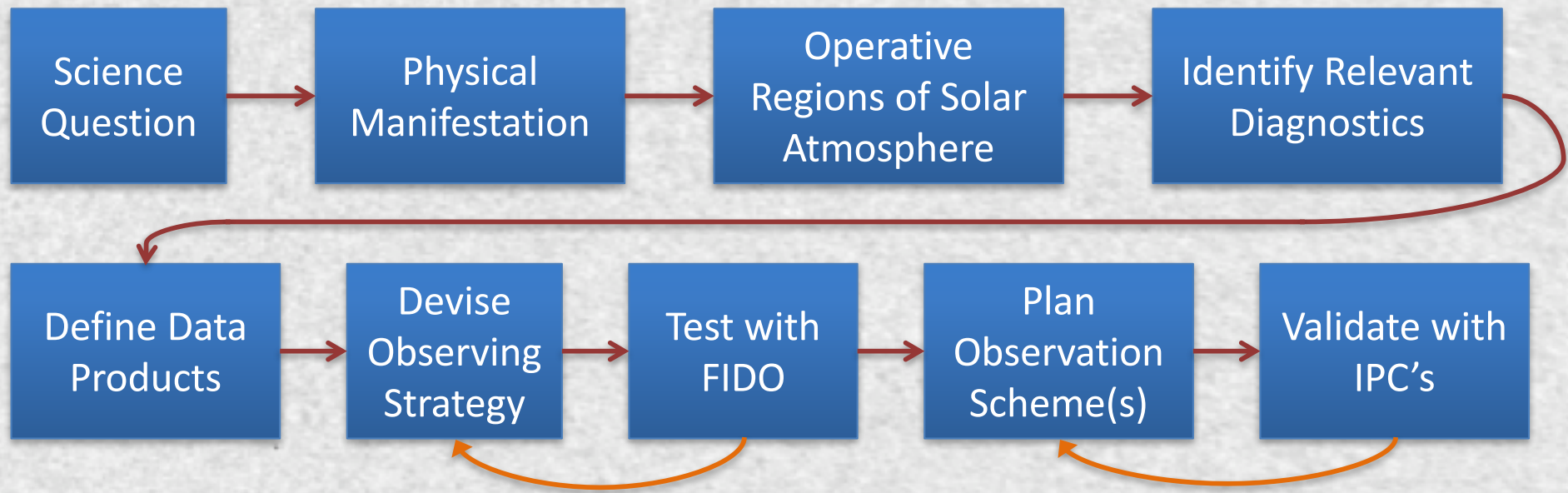


DKIST Critical Science Plan Workshop #5: Wave generation and propagation

JIRA: Writing a Science Use Case – Getting started






<http://nso-atst.atlassian.net/>



Collaborative JIRA environment for Science Use Case development


If you do not yet have an account, **email an account request to:**


DKISTCSP@nso.edu


DKIST CSP JIRA Site (<https://nso-atst.atlassian.net/secure/Dashboard.jspa>)







 Dashboards


 Projects


 Issues

 Settings

 Tests

NEW JIRA EXPERIENCE

 What has changed?

 Turn off for now

CSP Community DB

Introduction

Welcome to the DKIST Critical Science Plan development project.

Activity Stream

December 11

**Valentin Pillet** created UC-91 - Physical conditions at the Current Sheet trailing CMEs

 LLL [Comment](#) [Vote](#) [Watch](#)

December 08

**Valentin Pillet** commented on UC-90 - Synoptic Coronal Observations in support of PSP and Solar Orbiter

Done

 LLL [Comment](#) [Watch](#)

**Alexandra Tritzschler** commented on UC-90 - Synoptic Coronal Observations in support of PSP and Solar Orbiter

Hi Valentin, just a small correction: yes, the program asks for coordination but please choose "Synoptic" as Program Type.

 LLL [Comment](#) [Watch](#)

**Valentin Pillet** created UC-90 - Synoptic Coronal Observations in support of PSP and Solar Orbiter

 LLL [Comment](#) [Vote](#) [Watch](#)

December 07

Heat Map

Filament Other Plage or Network Prominence Quiet Corona
Quiet Sun Sunspots and/or Pores None

There are 8 distinct 'Type of Target(s)' values in 81 Issues

Two Dimensional Filter Statistic...

Type of Target(s)	Cryo-NIRSP (http://dkist.org)
Filament	3
Other	2
Plage or Network	3
Prominence	3
Quiet Corona	4
Quiet Sun	6
Sunspots and/or Pores	6
None	0
Total Unique Issues:	12

Showing 8 of 8 statistics.
Grouped by: Instrument Set Definition

Pie Chart: All CSP



Research Topic

Total Issues: 81

MC, M&EF: The Chromosphere-C...	11
None	10
MHD&DP: Small-Scale Photospher...	9
MHD&DP: Sunspots: Umbral and P...	9
F&EA: Coronal Magnetic Field Stru...	7
MHD&DP: Wave Generation and Pr...	6
F&EA: Magnetic Field Connectivity...	4
LTS: Long-Term Studies of the Sun	4
MC, M&EF: Spicule Physics	3
MHD&DP: Flux Emergence and Ac...	3
Other...	15

Bubble Chart: All CSP

Create a new Science Use Case

The screenshot displays the NSO CSP (Critical Science Plan) interface. On the left, a sidebar contains navigation links: 'Issues', 'All CSP', 'My open issues', 'Reported by me', 'All issues', 'Open issues', 'Done issues', 'Viewed recently', 'Created recently', 'Resolved recently', 'Updated recently', and 'Manage filters'. A red arrow points to the 'Issues' link. The main content area shows a list of use cases (UC-91 to UC-76) with a 'CSP' header and a 'Save as' button. A red arrow points to the 'Issue' link in the main content area. The 'Create issue' modal form is open, showing the following fields:

- Project**: Critical Science Plan: Use C...
- Issue Type**: Science Use Case
- Summary**: (NOTE: Summary == Title)
- Principal Investigator**: [Text input field]
- PI Affiliation**: [Text input field]
- Abstract**: [Text input field]
- Additional Users to E-mail**: [Text input field]
- Program Type**:
 - ☐ None
 - ☒ Regular (None of the below)
 - ☐ Target of Opportunity
 - ☐ Synoptic
 - ☐ Coordinated

At the bottom right, there are buttons for 'Create another', 'Create', and 'Cancel'.

DKIST CSP: JIRA User's Guide

Editing your Science Use Case (PI, Co-I)

The screenshot displays the JIRA DKIST CSP interface. On the left is a blue sidebar with navigation links: Issues, Search issues, All CSP, My open issues, Reported by me, All issues, Open issues, Done issues, Viewed recently, Created recently, Resolved recently, Updated recently, and Manage filters. The central panel shows a list of use cases under the heading 'All CSP'. A red arrow points to the 'Edit' button for UC-91, titled 'Physical conditions at the Current Sheet trailing CMEs'. The right-hand panel shows the 'Edit issue: UC-91' form. The form has tabs for GENERAL INFORMATION, SCIENCE JUSTIFICATION, OBSERVATION SPECIFICS, and TARGET SPECIFICS. The SCIENCE JUSTIFICATION tab is active, showing the title, summary, principal investigator, PI affiliation, abstract, and program type. The abstract text is: 'CMEs eruption are known to have a trailing current sheet where reconnection occurs and that likely results in the post flare loops arcades. By doing off-limb spectroscopy and polarimetry of this region we can constrain the physics of the reconnection processes.' The program type is set to 'Target of Opportunity'.

Left Sidebar:

- Issues
- Search issues
- All CSP
- My open issues
- Reported by me
- All issues
- Open issues
- Done issues
- Viewed recently
- Created recently
- Resolved recently
- Updated recently
- Manage filters

Central Panel:

Order by

- UC-91 Physical conditions at the Current Sheet trailing CMEs
- UC-90 Synoptic Coronal Observations in support of PSP and Sola...
- UC-89 Tracking the evolution of Corona Mass Ejections plasma
- UC-88 Properties of the solar wind source regions
- UC-87 Fine-structure of macro-spicules
- UC-86 Neutral Line Magnetic Context of Active Region Coronal H...
- UC-85 The cold chromosphere: Mapping CO spatial and temporal...
- UC-84 Resolving the spatial and temporal evolution of event-drive...
- UC-83 Flux Emergence Rates of Super-small-scale Magnetic Fields
- UC-82 Photospheric magnetic energy input and the chromospheri...
- UC-81 Chromospheric Signatures of Active Region Microflares
- UC-80 Chromospheric and photospheric magnetic field evolution ...
- UC-79 Spectro-polarimetric detection of propagating Alfvén waves
- UC-78 Reconnection events in the low solar atmosphere driven b...
- UC-77 Quasi-periodic oscillations with respect to high altitude re...
- UC-76 Sub-Arcsec Magnetic Signatures of the Fine Coronal and ...
- UC-75 Accumulation of magnetic twist in eruptive filaments in chr...
- UC-74 Emerging Flux: Current (de)Neutralization and reconnection
- UC-73 On the origin of isolated pores in the quiet-Sun and active-...

Right Panel: Edit issue: UC-91

GENERAL INFORMATION | SCIENCE JUSTIFICATION | OBSERVATION SPECIFICS | TARGET SPECIFICS

Summary*

Physical conditions at the Current Sheet trailing CMEs

Principal Investigator

vmpillet

PI Affiliation

National Solar Observatory

Abstract

CMEs eruption are known to have a trailing current sheet where reconnection occurs and that likely results in the post flare loops arcades. By doing off-limb spectroscopy and polarimetry of this region we can constrain the physics of the reconnection processes.

Program Type

☐ None

☒ Regular (None of the below)

☐ Target of Opportunity

☐ Synoptic

☐ Coordinated

Update **Cancel**

DKIST CSP **Science Use Case** development strategy:

1. Formulate science context and goals
(JIRA form tabs – General Information, Science Justification, Target Specifics)
2. Identify observational needs (spectral lines of interest, pattern, cadence, sensitivities)
(JIRA form tab – **Observation Specifics**, Instrument Specifics)
3. Determine useful DKIST instrument suite
(JIRA form tabs – Observation Specifics, Instrument Specifics)
FIDO – aka Coudé configuration and Data Rate tool, aka Beam Splitter Tool
4. Assess instrument performance capabilities
(JIRA form tabs – Instrument Specifics)
Instrument Performance Calculators (IPCs)

Determine useful DKIST instrument suite

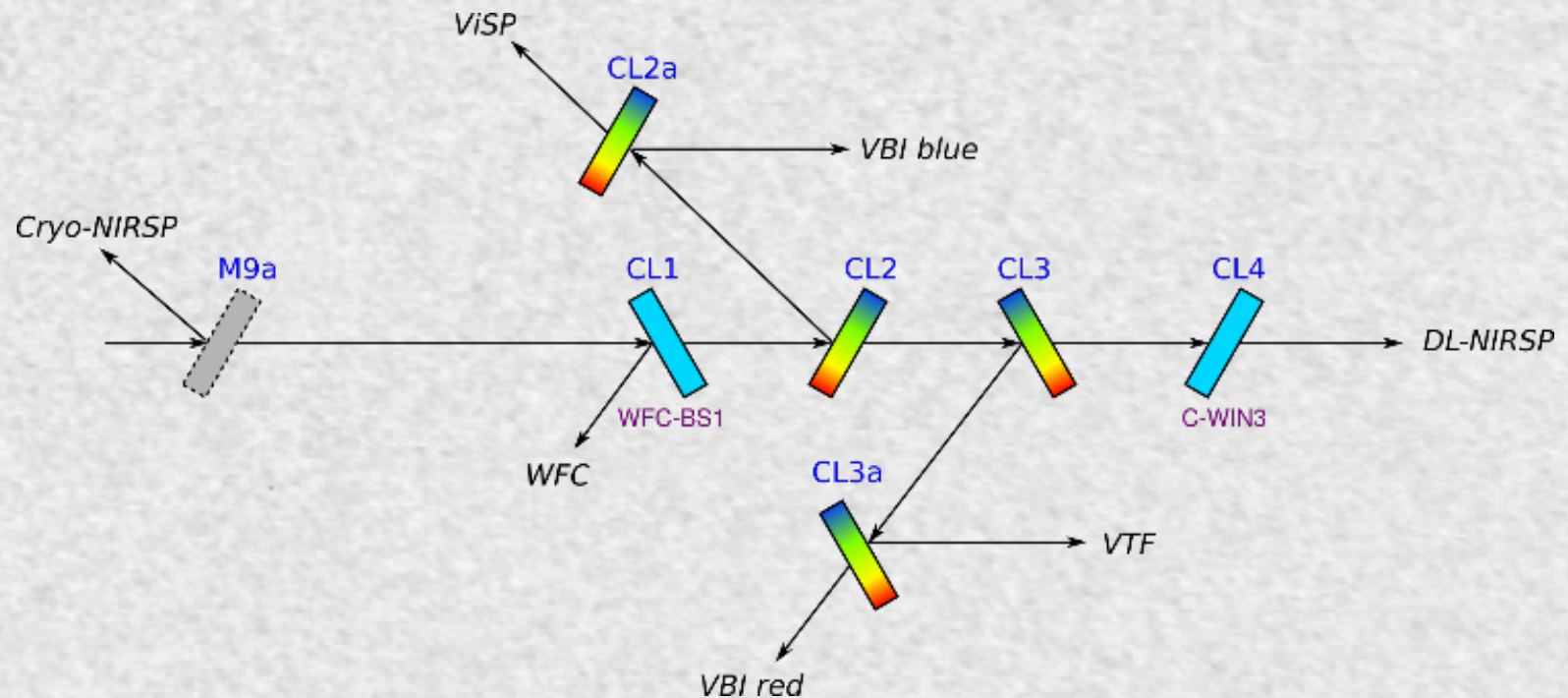
DKIST Instrument Summary Table

<http://dkist.nso.edu/CSP/instruments>

	Instrument type	Spectral range	Spectral resolution	Spatial sampling	Maximum Instantaneous Field of View	Maximum Sampled Field of View	Peak Cadence	Analogous Instruments
Visible Broadband Imager <i>VBI (Blue)</i>	High Cadence, High Resolution Imager	390-550nm (sequential filter sequencing)	N/A	0.011"	45" x 45"	2' x 2' (sequential field sampling)	3.2 sec (reconstructed) 0.03 sec (raw images)	ROSA, Hinode/BFI <i>High cadence, high spatial resolution</i>
Visible Spectropolarimeter <i>ViSP</i>	Scanning Slit Spectropolarimeter	380-900nm (3 spectral windows at a time)	>180,000	0.0195" (arm 1) 0.0236" (arm 2) 0.0295" (arm 3) [sampling along slit]	5 slits Width x Length 0.028" or 50" (arm 1) 0.041" or 60" (arm 2) 0.053" or 75" (arm 3) 0.106" or 0.214"	Slit length x 2'	0.5-10 sec per slit position (polarimetry) 0.02-0.2 sec per slit position (intensity-only)	SPINOR, Hinode/SP, IRIS, GRIS <i>Scanning spectrograph, high spectral fidelity</i>
Visible Tunable Filter <i>VTF</i>	Fabry Perot Imaging Spectropolarimeter	520-870nm (sequential scans through multiple spectral lines)	FWHM 6-8 pm	0.014"	60" x 60"	60" x 60"	Typical scan times per spectral line: 0.5-2 s (intensity only); 2-10 s (polarimetry)	IBIS, CRISP, GFPI <i>Imaging spectropolarimeter</i>
Visible Broadband Imager <i>VBI (Red)</i>	High Cadence, High Resolution Imager	600-860nm (sequential filter sequencing)	N/A	0.017"	69" x 69"	2' x 2' (sequential field sampling)	3.2 sec (reconstructed) 0.03 sec (raw images)	ROSA, Hinode/BFI <i>High cadence, high spatial resolution</i>
Diffraction Limited Near Infrared Spectropolarimeter <i>DL-NIRSP</i>	Integral Field Unit Spectropolarimeter	500-900nm 900-1350nm 1350-1800nm (1 filter band per channel)	125,000	0.03" (high res) 0.077" (mid res) 0.464" (wide field)	2.4" x 1.8" (high res) 6.16" x 4.62" (mid res.) 27.84" x 18.56" (wide)	2' x 2'	Depends on resolution and total field of view. E.g. 6s for one tile, on-disk, high resolution, full polarimetry	SPIES <i>True Imaging Spectropolarimeter: simultaneous 2D FOV and spectral information using fiber-fed IFU</i>
Cryogenic Near Infrared Spectropolarimeter <i>Cryo- NIRSP</i>	Scanning Slit Spectropolarimeter	1000-5000nm (1 filter band at a time. About 70 s to switch filters)	100,000 on-disk 30,000 off-limb	0.12" [along slit] (no Adaptive Optics)	2 slits 0.15" x 120" slit 0.5" x 240" slit	4' x 3' (near limb) 5' round (off-limb)	Heavily depends on signal to noise. Maximum frame rate is 10 frames per second e.g. 1s per slit position near-limb/ chromosphere	CYRA (BBSO) <i>Cryogenic, scanning spectrograph, novel diagnostics</i>
Cryo-NIRSP <i>Context Imager</i>	Imager	1000-5000nm (1 filter band at a time, with fast switching time to support sequential observations during a single-band spectrograph scan.)	N/A	0.052" (no Adaptive Optics)	100" x 100"	4' x 3' (near limb) 5' round (off-limb)	Heavily depends on signal to noise. Maximum frame rate is 10 frames per second e.g. 1s per slit position near-limb/ chromosphere	CYRA (BBSO) <i>Cryogenic, scanning spectrograph, novel diagnostics</i>

Facility Instrument Distribution Optics (FIDO):

- FIDO diverts short and *passes long wavelengths* with each successive beamsplitter encounter (a few exceptions)
- Changing from one optical configuration to another is a manual process that requires up to one day to complete
- Cryo-NIRSP receives all the light, can not operate simultaneously with any of the other DKIST instrumentation or the adaptive optics system, can be accessed within several tens of minutes .

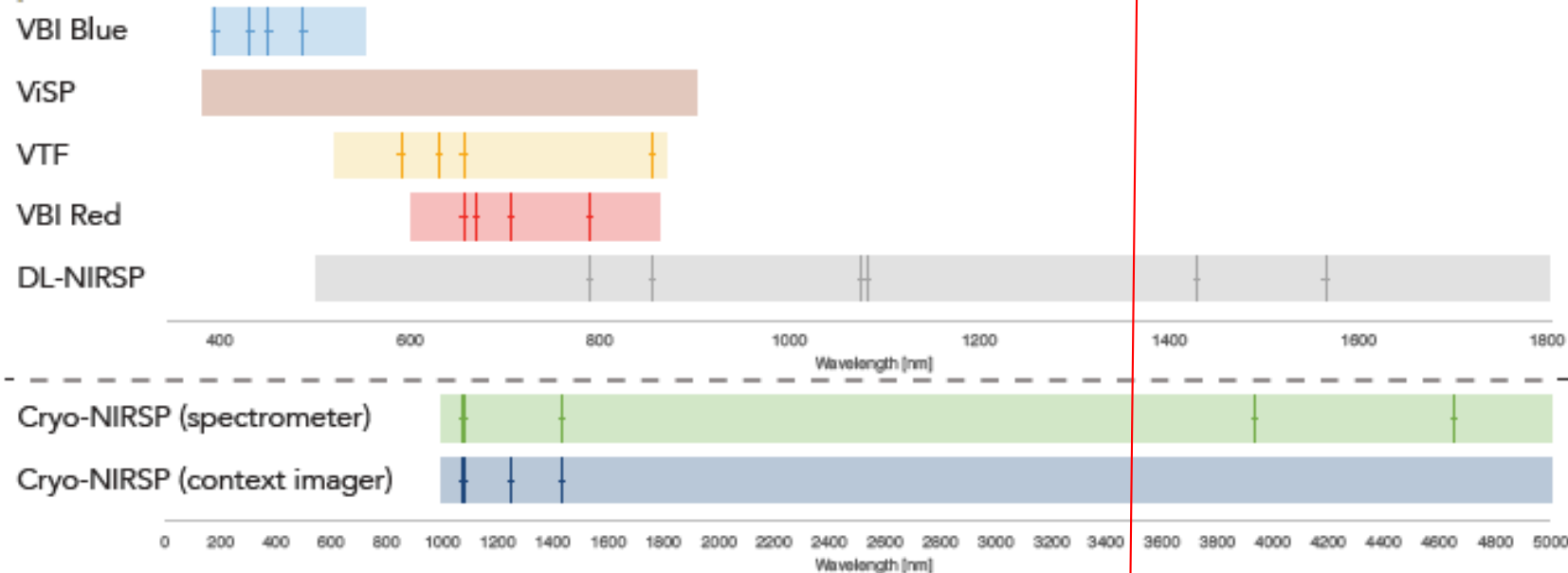


See Summary FIDO document and download:

<http://dkist.nso.edu/CSP/instruments>

DKIST Instrument Summary Table

<http://dkist.nso.edu/CSP/instruments>



VBI Blue	ViSP	VTF	VBI Red	DL-NIRSP	Cryo-NIRSP	Cryo Context
Ca II K 393.327nm G-band 430.52nm Continuum 450.287nm H-beta 486.1nm	Access to entire spectral range between 380-900 nm	Na D 589.6nm Fe I 630.25nm H-alpha 656.3nm Ca II 854.2nm	H-alpha 656.282nm Continuum 668.423nm Ti O 705.839nm Fe XI 789.186nm	Fe XI 789nm Ca II 854.2nm Fe XIII 1074.7nm He I 1083nm Si X 1430nm Fe I 1565nm	Fe XIII 1074.7nm Fe XIII 1079.7nm He I 1083 nm Si X 1430nm Si IX 3935 nm CO 4651nm	Fe XIII 1074.7nm He I 1083nm J Band 1250nm Si IX 1430nm

This table is meant to give an idea of the capabilities of the DKIST first light instrument suite. It cannot capture the large trade space that is provided by the flexibility of the instruments. For more information, visit <http://dkist.nso.edu/CSP/instruments>

Visible light cameras for instruments are provided by a UK consortium.



Check your selection using the Beam Splitter (FIDO) and Data-rate Analysis Tool

INPUTS:

Wavelengths
and modes for
each desired
instrument

Priorities can
also be used for
optimization
(instrument
selection)

The screenshot shows a software window titled "DKIST" with a "VBI" tab selected. The interface is organized into sections for different instruments: VBI, VTF, ViSP, and DL-NIRSP. Each section contains checkboxes for camera selection, wavelength selection (with dropdown menus for modes), and priority input fields. The "VBI" section has two camera rows, each with four wavelength options (393 nm, 430 nm, 450 nm, 486 nm) and a "ReconstructedImage" dropdown. The "VTF" section has one camera row with four wavelength options (525 nm, 630 nm, 656 nm, 854 nm) and an "UnbinnedPolarimetric Mode" dropdown. The "ViSP" section has three camera rows, each with a "wavelength [nm]" input field and a "Priority" field. The "DL-NIRSP" section has three camera rows, each with two wavelength options (789 nm, 854 nm; 1074 nm, 1083 nm; 1430 nm, 1565 nm) and a "Priority" field. At the bottom, there are two dropdown menus: "VeryFastCadence (intensity only)" and "FastCadence (low pol. precision)". An "Analyze Configuration" button is located at the very bottom.

DKIST

VBI

Camera 1 ☒ 393 nm ☒ 430 nm ☐ 450 nm ☐ 486 nm

ReconstructedImage ReconstructedImage ReconstructedImage ReconstructedImage

Priority: 1 1 1 1

Camera 2 ☒ 656 nm ☐ 668 nm ☐ 705 nm ☐ 789 nm

ReconstructedImage ReconstructedImage ReconstructedImage ReconstructedImage

Priority: 1 1 1 1

VTF

Cameras ☒ 525 nm ☐ 630 nm ☐ 656 nm ☐ 854 nm

UnbinnedPolarimetric Mode

Priority: 1 1 1 1

ViSP

☒ Camera 1 wavelength [nm]: 700 Priority: 1

☐ Camera 2 wavelength [nm]: Priority: 1

☐ Camera 3 wavelength [nm]: Priority: 1

VeryFastCadence (intensity only)

DL-NIRSP

☒ Camera 1 ☐ 789 nm ☒ 854 nm Priority: 1

☒ Camera 2 ☐ 1074 nm ☒ 1083 nm Priority: 1

☒ Camera 3 ☐ 1430 nm ☒ 1565 nm Priority: 1

FastCadence (low pol. precision)

Analyze Configuration

Output to be included under INSTRUMENT SPECIFICS tab on JIRA form

Instrument Performance Calculators (IPCs)

- Set of tools (i.e. software programs/applications) to explore instrument capabilities – e.g. line selection, exposure times, SNR etc.
- A *separate* IPC needs to be run for each instrument. VBI and VTF are Java applications (1.9); ViSP and DL-NIRSP run in IDL (8+). (The Cryo-NIRSP IPC unfortunately is not yet ready for distribution)

Instrument Performance Calculators:
<http://dkist.nso.edu/CSP/instruments>

Output can be attached to JIRA form for sharing with team and for possible future Science Use Case development.

BUT relevant content of IPS must be entered into Science Use Case as well.

<http://nso-atst.atlassian.net/>

Instructions: UC-69

Issues

Search issues

All CSP

My open issues

Reported by me

All issues

Open issues

Done issues

Viewed recently

Created recently

Resolved recently

Updated recently

Manage filters

All CSP

Save as

Details

★

Critical Scienc...

Type: All

Status: All

Assignee: All

Contains text

More

Advanced

UC-72

Observe Coronal and Chromospheric Jets in ...

UC-71

Structure, Dynamics, and Magnetic Environ...

UC-70

Magnetic structure, formation and evolution ...

UC-69

Science Use Case instructions

UC-65

Evolution of 3D magnetic configuration at m...

UC-64

FIP fractionation as tracer of solar wind sour...

UC-63

Short-term evolution of internetwork magnet...

UC-62

Are quiet-Sun internetwork fields turbulent? ...

UC-61

DKIST and Solar Orbiter observations for un...

UC-60

Coronal helium abundance from joint DKIST ...

UC-59

Co-ordinated observations with DKIST and S...

UC-58

1

2

>

Critical Science Plan: Use Case (UC) Development / UC-69

24 of 82

Science Use Case instructions

Edit

Comment

Assign

Start Progress

Admin

Type:

Science Use Case

Status:

OPEN

(View workflow)

Priority:

Minor

Resolution:

Unresolved

Labels:

None

Assignee:

Mark Rast

Reporter:

Mark Rast

Principal Investigator:

Mark Rast

Votes:

0

Watchers:

0

Start watching this issue

Created:

02/Nov/17 7:31 AM

Updated:

19/Dec/17 4:02 PM

GENERAL INFORMATION

SCIENCE JUSTIFICATION

OBSERVATION SPECIFICS

TARGET SPECIFICS

INSTRUMENT SPECIFICS

PI Affiliation:

Use Case Principle Investigator is generally also the UC creator. PI can add Co-Is (via 'Additional Users to E-mail' field) and can re-assign UC to another PI. CO-I's must have CSP JIRA account (send email address DKISTCSP@nso.edu for account request).

Abstract:

Please provide a short summary of your

DKIST CSP: JIRA User's Guide

Status and Labels Fields

The screenshot shows the JIRA DKIST CSP interface. On the left is a blue sidebar with navigation options: Issues, Search issues, All CSP (selected), My open issues, Reported by me, All issues, Open issues, Done issues, and Viewed recently. The main content area is titled 'All CSP' and includes filters for Critical Science Plan, Type, Status, Assignee, and a search bar. A list of issues is on the left, and a detailed view of issue UC-61 is on the right. The issue title is 'DKIST and Solar Orbiter observations for understanding the creation of upflowing plasma on the Sun.' The 'Start Progress' button in the actions bar is highlighted with a red arrow.

- For now please do not select *Start Progress* (which changes the *Status* field)

This screenshot is similar to the one above but highlights the 'Labels' field. A red arrow points to the 'Labels' field in the issue details, which currently shows 'None'. Another red arrow points to the three-dot menu icon in the top right corner of the issue details section.

- If you worked on your Science Use Case as part of a DKIST CSP Workshop, please edit *Labels* as:
 - CSPW-SPD2016
 - CSPW-Huntsville
 - CSPW-DC
 - CSPW-Freiburg
 - CSPW-Nagoya
 - CSPW-JHU/APL
 - **CSPW-Newcastle**
 - CSPW-NMSU
 - CSPW-Rice
 - CSPW-Bozeman
 - CSPW-Synoptic
- as appropriate.

<http://dkist.nso.edu/CSP>

- Critical science description (living document) with links to Science Use Case titles and abstracts, and ultimately their full text
- Links to Instrument and other summary documents
- Links to beam-splitter configuration and data rate analysis tool (FIDO)

NOTE: LINKS to ALL documents and tools at MASTER LINK:
<https://dkist.nso.edu/CSP/instruments>. Everything can be found through this one link.

<http://nso-atst.atlassian.net/>

Collaborative JIRA environment for Science Use Case development, and ultimately Observing Proposal development

<https://www.dropbox.com/sh/uzwdc03ayovxr5o/AABuZbWtCnfPqG8F2zHaeCFta?dl=0>

Dropbox link with summary documents (Instruments, Data Handling System (DHS), Facility Instrument Distribution Optics (FIDO), JIRA User's guide), and Instrument Performance Calculators (IPCs)