SPINOR Observing Run Observing Plan

Objectives

1. Demonstrate SPINOR performance in the infrared beyond 1μm. Solar disk observations and calibration of the DST from the IRT to 1.56μm will be performed. This will confirm the design of the SPINOR achromatic polarization optics and operation of the HAO Rockwell IR camera in this wavelength range.
2. Observe "internetwork fields and chromospheric dynamics" utilizing wavelengths newly available for spectro-polarimetry by SPINOR -- 1.56μm and the IRT 849.8nm, 854.2nm, and 866.2nm.
3. Collect data needed to demonstrate use of the 614.9nm solar line for ATST telescope calibration. This line shows no linear polarization so cross talk from circular to linear seen in a sunspot can be used to infer elements of a telescope model.

Initial Setup (2 clear days)

1. Change to uncoated lenses in the HOAO system and align it
2. Install SPINOR achromatic modulator and calibration retarder
3. Set up the HSG for the IRT and 1.5648μm
    a. Normal feed path to HSG slit.
    b. Normal 'ASP' HSG alignment but with 308.57l/mm 52° blaze grating.
    c. Reflected beam from slit jaw is relayed to UV sensitive camera operating at Cak
    d. 'KELP' half wave retarder is mounted behind the slit. Orientation is optimized for maximum average extinction of one IRT beam and one 1.56μm when a versalight polarizer is placed in the beam before the slit and oriented vertically or horizontally.
    e. Polarizing beam splitter aligned on the spectrograph for average orientation of two beams on Pluto camera as near vertical as possible. Place overlapping pupil images on the grating. No need to do PBS alignment on the bench.
    f. Pick off mirror for 866.2nm located as close to HSG 'L' as possible.
    g. 1219mm focal length achromat ~4.5m from grating for 849.8nm and 854.2nm.
    h. Small fold mirror for 854.2nm on ernie camera. NSO pre-filter.
    i. Straight through beam for 849.8nm on bert camera. NSO pre-filter.
    j. 1000mm focal length visible coated achromat to re-image 866.2nm on Pluto camera. HAO pre-filter.
    k. 1000mm focal length IR coated achromat to image 1.5648μm on Rockwell camera.

Science Observations (1 clear day)

1. If seeing is not good do a polarization calibration
2. Perform a map of quiet Sun. Step size 0.37 arc seconds (= slit width) and 200 steps (15-20 min).
3. Perform a movie centered in quiet disk region. Step size 0.37 arc seconds, 7 steps, 100 repeats (1hr).
4. Throughout maps and movies, record Cak slit jaw images.
5. If no polarization calibration early, then do one after the first set of maps and movie.
6. Continue with maps and movies while there is chance of good seeing.

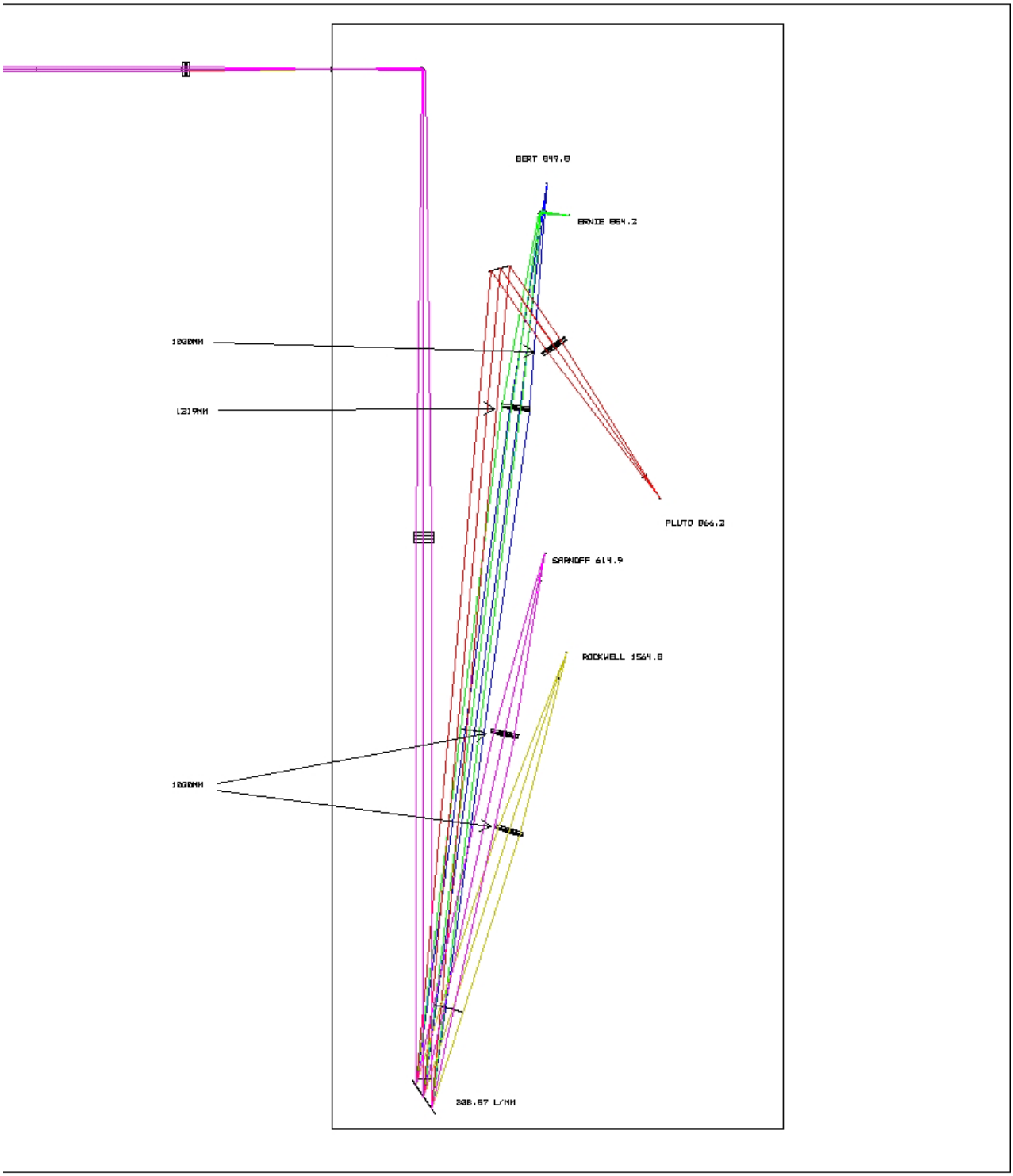
Telescope Calibration (1 clear day)

Once a sequence of science observations has been recorded.

1. Mount polarizer over entrance aperture of telescope the afternoon before the calibration run.
2. Set up Rockwell camera with cross disperser.
3. Replace polarizing beam splitter with linear polarizer.
4. Perform 'Tel' calibrations throughout at least ½ of one day.

Science + ATST calibration demonstration (remaining days)

1. Return to ‘science’ set up for Rockwell, bert, and ernie cameras
2. Set up Sarnoff camera in place of Pluto for 614.9nm using 1000mm focal length vis AR achromat.
3. Perform ‘science observations’ as above on a region including a sunspot



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