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Introduction to the Goodman HTS

Instrument Overview

The Goodman High Throughput Spectrograph has been upgraded to provide users with the *choice of one of two separate cameras.*
One is the original UV-optimized **Blue Camera**, with a 4096x4096 Fairchid CCD. The new device is the **Red Camera**, equipped with an e2v 4096x4096 detector optimized for work at red wavelengths with negligible fringing redward of ~650nm compared to the Blue Camera. For both detectors the pixel scale is the same (0.15 arcsec per pixel). This provides a 3096 x 3096 unbinned pixels (~7.2 arcmin diameter) FOV in imaging mode and a 4096 x 1896 unbinned pixels FOV in spectroscopic mode. The long slit masks in spectroscopic mode are approximately 3.9 arcmin in length and cover ~1560 unbinned pixels, leaving enough pixels above and below the slit to obtain an estimate of the stray and scattered light.

In both cameras, the CCD is read by the Spectral Instruments [1] controller. In the Blue Camera through 1 amplifier.
Blue Camera: Depending on binning and the gain setting, the CCD can be read in as little as 20 seconds (1x1 fast readout) to as long as 80 seconds (1x1 slow readout) in spectroscopic mode. Please see the table given in the Goodman Overview [2] page for a more detailed description.

The data are taken via a vncviewer on the Goodman data acquisition computer (soaric6 for the Red Camera and soaric2 for the Blue Camera) and examined via a vncviewer on the Goodman data analysis computer (soaric7). From soaric7, one can transfer the data to their home institution using "scp".

Unbinned Goodman spectra plus overscan and header information are approximately 16 Mbytes each. A typical night produces about 2-4 Gbytes of data and easily transferred over the internet. This is the preferred method of the SOAR partners. If this is unfeasible, please contact Sean Points prior to your run so that other options can be discussed.

The Goodman imaging (first) filter wheel contains space for 4 square 4x4 inch filters, plus one blank position. The second filter wheel holds 4 inch diameter circular filters, and has 6 positions, 5 regularly

equipped with the order sortting spectroscopic filters, and one open position. Filters may be up to 10mm thick.

For the list of available filters look at the [SOAR Filters page.](http://www.ctio.noao.edu/soar/content/filters-available-soar) [3] Special arrangements for installing filters should be consulted well in advance of an obsreving run with the Instrument Scientist.

Philosophy and Structure of this Manual

This manual is intended for an observer planning to use the Goodman spectrograph. It is not intended to serve as a hardware or software reference document describing the inner workings of Goodman, although some details at that level may appear to help the observer plan observing strategies. Also, we assume that the observer is already familiar with CCD cameras, spectroscopic observations, and data reductions.

The [Goodman Overview](http://www.ctio.noao.edu/soar/content/goodman-spectrograph-overview) [2] is at the front of this manual. If you've read this far, and don't plan to read any further, be sure you understand the [Goodman Overview](http://www.ctio.noao.edu/soar/content/goodman-spectrograph-overview) [2] pages.

Development of the Goodman High Throughput Spectrograph is a continuing process. Throughout the lifetime of the instrument, filters will be added, old ones replaced, and software enhanced. This manual represents the status as of the date on the cover page. We expect to revise the manual occasionally to include information gained during engineering runs, as well as to reflect new filters.

Supplemental Information

[A Beginner's Guide to Using *IRAF*](http://iraf.noao.edu/iraf/ftp/pub/beguide.ps.Z) [4] (*IRAF* Version 2.10), Jeannette Barnes, August 1993

[A User's Guide to CCD Reductions with *IRAF*](http://iraf.noao.edu/iraf/ftp/iraf/docs/ccduser3.ps.Z) [5], Philip Massey, February 1997

[A User's Guide to Reducing Slit Spectra with *IRAF*](http://iraf.noao.edu/iraf/ftp/iraf/docs/spect.ps.Z) [6], Phil Massey, Frank Valdes, Jeannette Barnes, April 1992

[Guide to the Slit Spectra Reduction Task DOSLIT](http://iraf.noao.edu/iraf/ftp/iraf/docs/doslit.ps.Z) [7], Francisco Valdes, February 1993

Source URL: http://www.ctio.noao.edu/soar/content/introduction-goodman-hts

Links
[1] http://www.specinst.com/
[2] http://www.ctio.noao.edu/soar/content/goodman-spectrograph-overview
[3] http://www.ctio.noao.edu/soar/content/filters-available-soar
[4] http://iraf.noao.edu/iraf/ftp/pub/beguide.ps.Z
[5] http://iraf.noao.edu/iraf/ftp/iraf/docs/ccduser3.ps.Z
[6] http://iraf.noao.edu/iraf/ftp/iraf/docs/spect.ps.Z
[7] http://iraf.noao.edu/iraf/ftp/iraf/docs/doslit.ps.Z