Goodman Spectrograph Commissioning at SOAR

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With the delivery of its new CCD camera, commissioning of the Goodman High Throughput Spectrograph is now proceeding apace. The new camera manufactured by Spectral Instruments contains a 4K × 4K Fairchild CCD to cover the 320–850 nm range with a pixel size of 15 microns/pixel.

The Goodman Spectrograph, built by J. Christopher Clemens (University of North Carolina, Chapel Hill) and collaborators, is an imaging, multi-object spectrograph for the SOAR 4.1-meter telescope. It employs all-transmissive optics and Volume Phase Holographic (VPH) gratings to achieve the highest-possible throughput for low-resolution spectroscopy over the specified wavelength range. In imaging mode the plate scale is 0.15 arcsec/pixel and the field of view is 7.2 arcmin in diameter. The initial complement of imaging filters includes U, B, V, and R on the Kron-Cousins system.

In spectroscopic mode, the Goodman Spectrograph will be able to obtain spectra of multiple objects simultaneously over a field of 3.0 × 5.0 arcmin using multi-slit masks. A carousel-style mask changer, holding up to 36 masks, will allow the slit plates to be accurately and reproducibly located at the instrument's entrance aperture. The instrument has been initially deployed with a complement of five fixed, long slits with widths of 0.45, 0.84, 1.03, 1.35, and 1.68 arcsec. These are each 5 arcmin long, but can be fitted with optional decker plates.

Since delivery of the new camera to Chile in September 2007, the spectrograph has undergone three short integration and testing runs in September, November, and December 2007, resulting in significant progress toward the commissioning of the instrument. The bulk of the software and computer integration with the telescope has been completed. The observing interface has been tested, and suggestions based on the commissioning tests are being integrated.

Three-color image of NGC 1300 taken with the Goodman Spectrograph in imaging mode during its November 2007 commissioning run.

Further commissioning tests of the Goodman Spectrograph are planned for the 2008A semester, with the anticipation that it will be available for community use in imaging and long-slit mode during the 2008B semester on a shared-risk basis.

Once these basic modes of operation have been commissioned, work will begin to enable multi-slit spectroscopy. The mask-cutting machine, to be shared with Gemini South, has already been installed and is under test in La Serena.

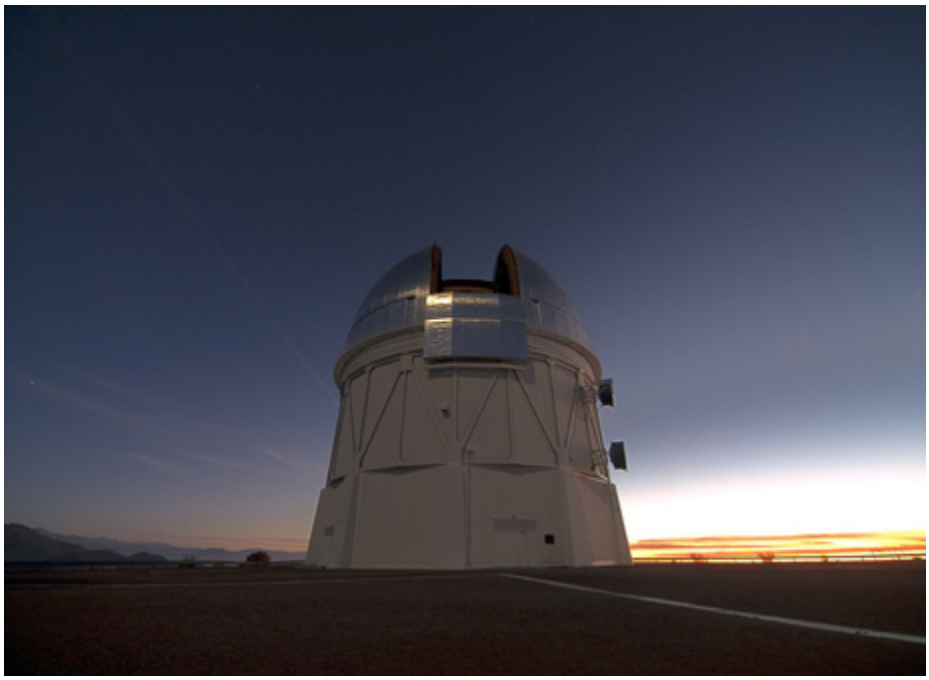
DES/DECam Status Report

Timothy Abbott

The Dark Energy Survey (DES) underwent two major external reviews during the past two months. The December review was under the auspices of the directors of NOAO, Kitt Peak National Observatory (KNPO), and Cerro Tololo Inter-American Observatory (CTIO); Fermilab; and the National Center for Supercomputing Applications (NCSA). The January review was conducted by the Department of Energy (DOE) Office of Project Assessment, within the Office of Science, at the request of Dennis Kovar, the acting head of the DOE Office of High Energy Physics, and Wayne Van Citters, the head of the NSF Division of Astronomical Sciences.

The Directors' review generated a number of healthy recommendations that are being implemented. The closeout presentations from the joint NSF/DOE review were most encouraging, because they recommended that DOE pursue Critical Decisions 2 and 3a. The former establishes the baselines for technical performance, cost, and schedule. The latter will allow the DOE Office of High Energy Physics to release the already-appropriated FY 2008 funds for long-lead procurements for the instrument construction. These recommendations will be in the report that will be submitted to Dennis Kovar and Wayne Van Citters.

Progress on the Dark Energy Camera (DECam) has been solid on all fronts. All five camera lens blanks appear to be of exceptional quality and have been brought to within 1 millimeter of their final figure. They are currently in storage awaiting the award of a contract to the selected figuring vendor. Parts of the prototype cryogenic system have been purchased, and this system will be assembled and tested at Fermilab. Charge-coupled device (CCD) production continues apace, and Fermilab has quickly developed considerable expertise in their characterization and test. Simultaneously, the front-end electronics team has developed and refined a higher-density version of MONSOON to drive the 70 CCDs in the imager focal plane, while the opto-mechanical design is rapidly converging. The data management team centered at NCSA is meeting their data challenges with aplomb. CTIO is on-track with development of a new telescope control system for the Blanco 4-meter telescope and establishment of a procedure for repair of the primary radial-support system based on a complete understanding of the intrinsic causes of the problem.



The Blanco 4-meter telescope at Cerro Tololo which will host DECam. Credit: T. Abbott

The DES will hold a collaboration meeting in La Serena in April, during which the various groups will come together to further discuss the scientific goals of the project. Two technical workshops will be held that same week: one on integration, installation, and commissioning of the instrument; and the other on the front-end electronics.

First light for the completed instrument is anticipated to be acquired in semester 2011A. A document defining the NOAO community science needs for DECam may be found on the CTIO home page *www.ctio.noao.edu/* (or at *www.ctio.noao.edu/diroff/DECam_Community_Use_v2-3.pdf*). See the CTIO section of the September 2007 *NOAO/NSO Newsletter* for further discussion of this topic.