Real Time use of the HST Guide Star Catalog

A X-window graphical display of the positions of guide stars from the HST guide star catalog has been implemented to assist the observer in the selection of a suitable guide star.

The graphical display contains a layout of the guiding area (x-y stage position limits of the Bonnette) and the clear aperture of the bonnette top face. This represents an area of 75 arc minutes square centered on the acquisition field, and is 20 percent larger than the total possible guiding region delineated by the rotation of the offset guider. The visualization of the stars surrounding the acquisition field permits the observer to see the nearby field and possible use stars in this area for focussing. The stars are represented by circles in a relative position to the center of the guiding field, with their magnitudes color coded. (See Figure 7.)

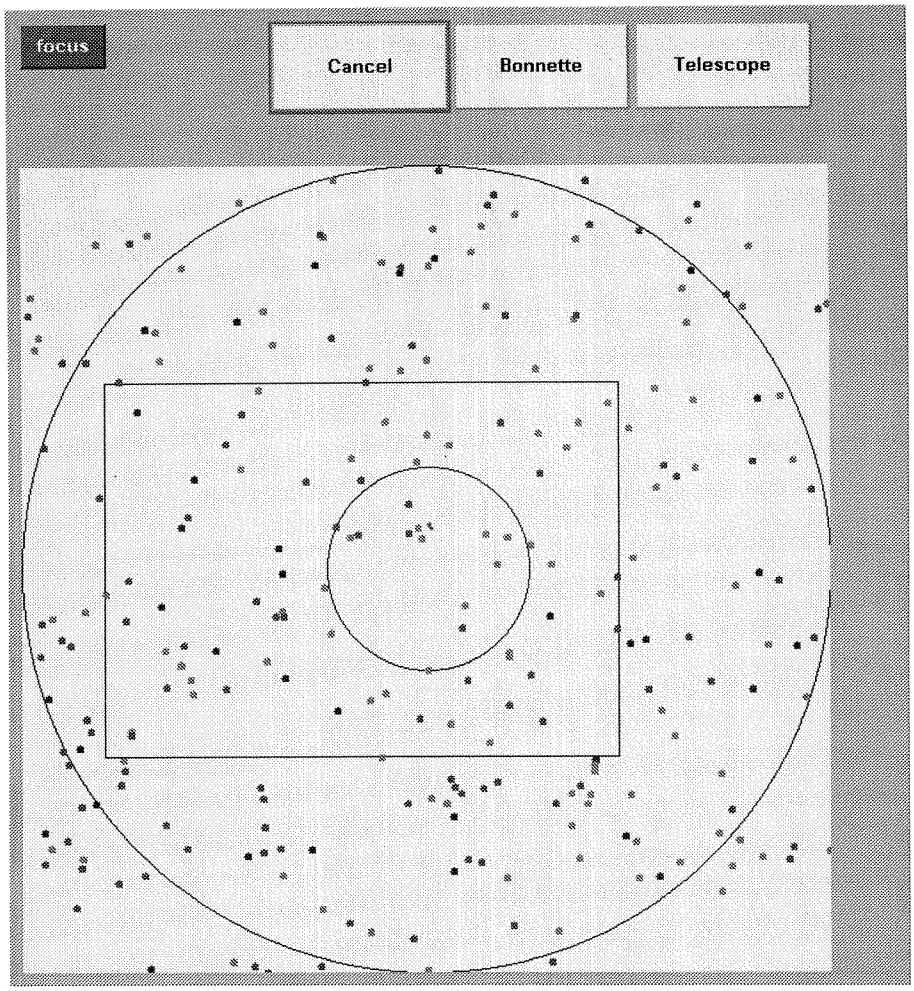

Figure 7

This software tool allows the user to select a guide star among the ones displayed in the guiding field. Upon selection the x-y stage of the Bonnette is moved to the position chosen. The movement of the center of the telescope can also be commanded to any position in the area displayed, providing an easy and rapid way to select and identify objects for focussing purposes or to scan the area around the acquisition field.

The original GSC is an all sky collection of about 20 million stars and other objects in the ninth to sixteenth magnitude range, and is distributed in two CD ROMs. The access to the data in the CD ROM is slow and requires changing of the discs depending on the part of the sky to where the telescope is pointing at, unless two CD drivers are used.

To speed up the retrieval of the stars positions and magnitudes the catalog was compressed and stored in a local disk. The compression reduced the size of the catalog from about 1 Gbyte to 140 Mbytes without loosing information.

B. Grundseth

CFHT New Imaging Plan

Two years ago, CFHT inaugurated a new imaging plan aimed at upgrading the imaging capabilities of our telescope so that optimum image quality would be available for optimal use of our second-generation instruments. Some of these instruments, such as the NICMOS-based infrared camera 'REDEYE', and MOS-SIS are already in service. The new Coudé f/4 spectrograph is well underway. The cornerstone of the New Imaging Plan - the Adaptive Optics Bonnette (PUEO) - has just completed phase A studies, and is awaiting the issue of fabrication and integration contracts.

In order for PUEO in particular to deliver the high resolution images expected from it, we must have the best initial "quality" from our telescope. This puts large constraints on the image quality delivered by the telescope optics and the dome environment. With this in mind, the following projects, all aimed at improving the telescope image quality, have been undertaken.

- The new f/8 Cassegrain secondary mirror focussing structure is designed to replace the exceedingly heavy and often recalcitrant upper end structure currently in place. The new mechanism should insure improved stability and much more reliable focus motion than is currently provided. A well known feature of the existing Cassegrain f/8 focus unit is the annoying lateral image motion seen while focussing. Equally troubling is the inability at many times to get the slow focus control to operate at all. Such behavior is unacceptable, in particular for AO Bonnette observation since we plan to change focus – albeit slowly – in real-time using focus errors detected by the AO Bonnette's wavefront sensor. Apart from providing these focus mechanism improvements,