A Red look continued

The high DQE of the detector allowed them to choose a higher dispersion grating, the BL 380 giving 0.46Å/pixel, and to use a narrow slit (1"), to achieve a velocity resolution of 40 km/s. By happenstance, Laura Ferrarese and collaborators observed six of the same targets with the RC spectrograph and T2KB while working on an identical program immediately preceding the Nelson run (*ApJL* 555, 79). To get useful S/N with T2KB in the same spectral range, they required a wider slit, set to 2". Nelson et al. measured velocity dispersions that were systematically 20-30 km/s higher than the Ferrarese results, primarily because they could exclude more of the contribution of dynamically cold disk light with the narrower slit.

The major result was a verification that the black hole masses determined from AGNs fell on the black hole mass-bulge velocity dispersion relation for quiescent black holes. Such a result gives confidence that the velocity width of variable broad emission lines is produced primarily by motion in the gravitational potential of the central source. Another major finding is that the bulge luminosities of the AGN hosts are significantly displaced from the higher-scatter relation between black hole mass and bulge luminosity for quiescent nuclei. Since the black hole masses determined from the reverberation technique and the bulge velocity dispersion relation agree, the best interpretation of this result is that AGN host bulges are systematically and significantly more luminous than host bulges of inactive black holes. The intriguing speculation is that recent activity associated with nearby black holes is accompanied by enhanced star formation, leading to lower mass-to-light ratios.

Quick & Dirty WFPC2 Stellar Photometry

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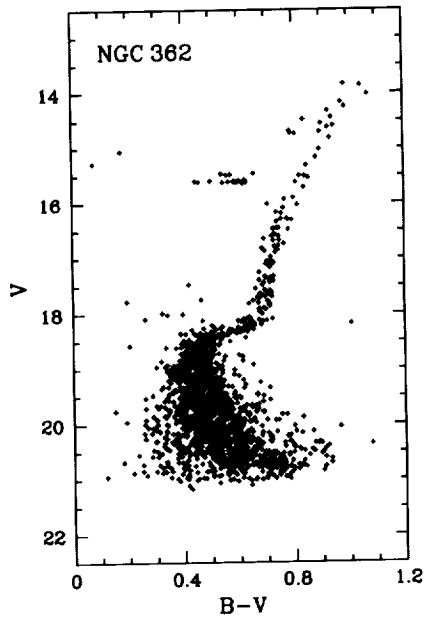
The latest release of the IRAF MXTOOLS package includes the new tasks QDWFPC2, which does quick CCD stellar photometry on two Hubble Space Telescope WFPC2 observations: WFPC2COLOR, which converts HST WFPC2 instrumental magnitudes to standard colors using the Holtzman et al. (1995, *PASP*, 107, 1065) color equations, and QDCMD, which reads the output of WFPC2COLOR and displays a color-magnitude diagram on a user-chosen graphics device.



The figure shows the results of a short QDWFPC2 demonstration that analyzes two HST WFPC2 observations of the Galactic globular cluster NGC362. Once the MXTOOLS package has been installed, the QDWFPC2 demonstration can be seen by typing the command "qdwfpc2" and accepting the two default images. *NOAO Newsletter* No. 65 showed the F555W versus (F439W-F555W) instrumental color-magnitude diagram produced by the QDPHOT demonstration task DEMOQDPHOT. The QDWFPC2 task is actually an IRAF script that first does QDPHOT photometry on the WFPC2 images, then converts the F439W and F555W instrumental magnitudes into standard Johnson B and V magnitudes, and finally displays the results as a color-magnitude diagram. The entire process generally takes just a few seconds (typically <10 seconds on a 200 MHz Sun Ultra1 workstation).

The QDWFPC2 task has been designed for ease of use by undergraduates working with HST archival WFPC2 images of stellar population in the Local Group. Anyone interested in using QDWFPC2 to analyze WFPC2 observations of Galactic star clusters in a laboratory setting as part of a senior-level astrophysics course on stellar evolution is encouraged to contact me at: *kmighell@noao.edu* for further discussion.

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