Hubble Space Telescope

Cycle 15 AR Proposal

Continuum and Monochromatic L-Flats for the ACS Ramp Filters

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Scientific Category: RESOLVED STELLAR POPULATIONS

Scientific Keywords: INTERSTELLAR AND INTERGALACTIC MEDIUM, PLANETARY NEBULAE, RESOLVED STELLAR POPULATIONS, SUPERNOVA REMNANTS, EVOLUTION

Total Budget Amount: $96,931 (Budget to be split over 1.5 years)

Calibration: Yes

Abstract

Currently, the pipeline reduction of ACS observations taken with the HRC and WFC cameras using the ramp filters inadequately corrects the lower spatial-frequency distortions of the field intensity because the present flat fields do not take into account the variation in transmitted intensity vs wavelength (and hence, sensitivity) with position within the ramp aperture. Ramp filter transmission varies by as much as 10% and more across the filter monochromatic FOV; this cannot be corrected by the present preliminary complement of surrogate flat fields that interpolate effective wavelengths of fields which are cut and pasted from the ACS broadband filters, which are coarsely sampled in wavelength. We propose to analyze the data ftom two ACS calibration programs, 10057 and 10741 taken of well-calibrated fields of the globular cluster 47 TUC and a emission-line region of the Orion Nebula to extract both continuum and monochromatic L-flats for the ACS ramp filters at specific wavelengths, for both HRC and WFC.

Priority will be given to frequently used ramp filters, including the two primary Cycle 14 filter wavelengths. This will support 40 GO/GTO programs from Cycles 11-14. Absolute calibration, relative comparison of stars within a population, and analysis of extended emission-line sources/objects will benefit from this work. The availability of ramp filter flatfielding will encourage the use of ramp filters in the future, which would partially compensate for the loss of the HST major spectroscopic capabilities after the failure of the STIS.

Investigators:

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Number of investigators: 1