



Contribution ID: 43 Type: **Poster presentation (90 second oral summary, 90 minute poster session & free presentation times over 3x 40m coffee breaks)**

WFC3 Detector Characteristics and Mitigation Techniques

Tuesday, 12 March 2024 14:30 (1h 30m)

Wide Field Camera 3 (WFC3) is a fourth-generation imaging instrument installed on the Hubble Space Telescope during Servicing Mission 4 in 2009. WFC3 features two independent channels: the Ultraviolet-Visible channel (UVIS), sensitive to 200-1000 nm, with a pair of ~2K x 4K CCDs, and the Infrared channel (IR), sensitive to near-IR approximately 800-1700 nm, with a ~1K x 1K HgCdTe array. WFC3 has been performing extremely well over its 15 years on-orbit, although each detector has characteristics that can affect the precision of astronomical measurements and thus require calibration. For example, the UVIS CCDs experience charge transfer efficiency losses due to radiation damage from the orbital environment, as well as dark current and hot pixel growth. UVIS also experiences a small number of anomalous pixels referred to as sink pixels and low-level pixel-to-pixel quantum efficiency fluctuations. The IR focal plane array exhibits persistence, hot/bad pixels, and snowballs. All the detector systematics are well-characterized and routinely monitored, with calibration and/or mitigation strategies updated as needed. Here we discuss some of the UVIS and IR detector systematics as well as the pre- and post-observation techniques we employ to mitigate their effects.

contribution subject matter

CCD sensors

Keywords for your contribution subject matter (this will assist SOC in accurately characterizing your contribution)

HgCdTe sensors, photometric and astrometric fidelity

Primary author: KUHN, Benjamin (Space Telescope Science Institute)

Co-authors: Dr BAGGETT, Sylvia (Space Telescope Science Institute); Dr ANDERSON, Jay (Space Telescope Science Institute); KHANDRIKA, Harish (Space Telescope Science Institute); PIDGEON, Aidan (Space Telescope Science Institute)

Presenter: KUHN, Benjamin (Space Telescope Science Institute)

Session Classification: Poster Session

Track Classification: Major ISPA Workshop Tracks: Sensor and Systematics Characterization