We present encircled energy (EE) measurements for the UVIS channel derived from observations of HST photometric standards over several years. These white dwarf and solar analog standard stars were observed in all 42 filters at multiple positions across the detector and allow us to characterize wavelength-dependent structure of the point-spread function (PSF). These measurements allow us to compute the average sensitivity ratio per chip for all UVIS filters, which are important for deriving the new chip-dependent zeropoints. They are also ideal for quantifying the accuracy of the flat fields by comparing the observed photometry at various locations across the detector.

**ABSTRACT**

Motivated by the different quantum efficiency of each of the WFC3/UVIS e2v detectors, other differences between the WFC3 chips, as well as the desire to improve the precision of WFC3 UVIS photometry we opted to change how the WFC3 UVIS photometric calibration is determined. The “Two Chip Solution” implements chip-dependent flat fields, and calculates chip-dependent photometric zeropoints for each filter plus CCD combination. This effort motivated the study of the encircled energy for the UVIS channel with these new improvements.

**REFERENCES AND ADDITIONAL INFORMATION**

- WFC3 Main Page: [www.stsci.edu/hst/wfc3](http://www.stsci.edu/hst/wfc3)
- STScI Help Desk: [help@stsci.edu](mailto:help@stsci.edu)

**CONCLUSION**

1. We analyzed the PSF structure (i.e. PSF wings, airy rings, etc.) of each white dwarf standard in both UVIS1 and UVIS2 in three key filters.
2. Our encircled energy values for these 3 filters, F225W, F606W, and F814W, are in good agreement with the UVIS PSF model and prove that we can provide accurate EE values for the rest of the 39 filters.
3. Our results show the drizzled PSF has a slightly broader FWHM compared to that in the FLT*PAM frames.

We plan to continue this analysis for the remaining 39 UVIS filters for each chip to provide filter-dependent encircled energy values for WFC3 users.