We present results from our ongoing work on obtaining newly derived trace and wavelength calibrations of the HST/ACS G800L grism and comparing them to previous set of calibrations. Past calibration efforts were based on 2003 observations. New observations of an emission line Wolf-Rayet star (WR96) were recently taken in HST Cycle 25 (PID: 15401). These observations are used to analyze and measure various grism properties, including wavelength calibration, spectral trace/tilt, length/size of grism orders, and spacing between various grism orders. To account for the field dependence, we observe WR96 at 3 different observing positions over the HST/ACS field of view. The three locations are the center of chip 1, the center of chip 2, and the center of the WFC1A-2K subarray (center of WFC Amp A on chip 1). This new data will help us to evaluate any differences in the G800L grism properties compared to previous calibration data, and to apply improved data analysis techniques to update these old measurements.

**HST/ACS Grism**

HST/Advanced Camera for Surveys (ACS) Wide Field Channel (WFC) has a 3.4’ x 3.4’ field of view at a spatial resolution of 0.05”/pixel and is equipped with a grism (G800L) covering the spectral range from 5500Å to 10000Å. The grism resolving power is ~100, and the dispersion is nearly linear: ~40Å/pixel in the first order.

This mode is important to spectroscopically investigate different kinds astrophysical objects (stars, emission line galaxies, passive galaxies, high redshift galaxies) as shown by various surveys (e.g., GRAPES, PEARLS).

**2018 Calibration Program**

We observed Wolf-Rayet star (WR96), which is a bright point source with strong emission lines, at 3 different positions (as shown below) on the two ACS WFC chips to check various properties (shape, length and spacing of grism orders, spectral tilt, wavelength calibration) of the ACS grism and its field dependence.

*The major goal of this program is to verify prior calibration results obtained from 2003 data (Pasquali+ 2003, 2006, Larsen+ 2005).*

Direct image (F775W) and grism image (G800L) of WR96


**Wavelength Calibration**

After reducing the grism data using aXe software (http://axe-info.stsci.edu), we compared observed emission line wavelengths with the reference emission line wavelengths (Pasquali+ 2006) and consistently found that the difference between those wavelengths is within ~40Å (~1 pixel), as expected based on prior wavelength calibrations (Pasquali+ 2003, Larsen+ 2005).

**Future Goal:** Our aim is to use new WFC3 wavelength calibration technique (Pirzkal+ 2016) to improve ACS wavelength calibration using all existing data.

**References**

- Pasquali+ 2003, ST-ECF ISR ACS 2003-001;
- Pasquali+ 2006, PASP, 118, 270;
- Larsen+ 2005, ST-ECF ISR ACS 2005-08;
- Pirzkal+ 2016, STScI ISR WFC3 2016-15