

# HST INS Work Item Data Sheet

1. SI/Title: STIS/Trace Stability for Often-Used Modes
2. INS Lead: L. Dressel
3. Description of Work:

Spectral “trace” reference files prescribe the projection of spectra onto the detector at a given position along the spectrograph slit. They are used to produce rectified spectral images and extracted spectra. Accurate traces are needed when individual rows in spectral images are to be analyzed – e.g., in kinematic studies of galaxies, designed to measure the masses of supermassive black holes in galactic nuclei. Accurate traces are also needed for photometric accuracy when small extraction boxes are required to separate nearby point sources or to better isolate a point source from more extended emission. The spectral traces now in use were created from in-flight data taken early in the orbital lifetime of STIS, and they can be seen to be in error in rectified spectral images taken in the last few cycles. This project will use calibration as well as GO data to derive spectral traces near the center of the detector (and, for CCD observations, at the E1 aperture positions), for the most commonly used gratings and central wavelengths at several epochs. We will examine changes in rotation and shape of the traces, and produce new reference files where needed. The highest-priority gratings and central wavelengths, selected by total science observing time, are the L gratings as well as G750M at central wavelengths 6581, 6768, and 8561. Apart from the creation of calibration reference files where needed, this project will involve the writing of an ISR.
4. Schedule Constraints and Dependencies:
5. Risks and Open Issues:
6. Priority: High
7. Priority Justification:

The need for properly-corrected spectral images affects some high-priority science programs.
8. Resources (including estimated calendar duration for each portion):
  - a. Requirements  
STIS Instrument Scientist
  - b. Development  
STIS Instrument Scientist  
STIS Data Analyst  
CDBS Administrator
  - c. Testing  
STIS Instrument Scientist  
STIS Data Analyst
9. Documentation and Deliverables:

STIS Calibration ISR  
CDBS Reference File(s) Update