

The FES Scattered Light Anomaly: A Summary

Terry J. Teays

Since it has been present in the Fine Error Sensor (FES) for over 21 months, most Guest Observers are familiar with the diffuse scattered light. The effects on science operations of the diffuse scattered light have been minimal. Some of the inconveniences that it brought about in target acquisition and guide star selection were alleviated by the capabilities of the new TOC hardware, especially the on-line finding chart capabilities (based on the HST Guide Star and SAO catalogs).

On September 14 we experienced an entirely new phenomenon. This took the form of a very bright region in the lower right of the FES. When present, the *streak* (as it has come to be called) can present difficulties for operations. In this *Newsletter* is an article by Weinstein & Carini which gives a more detailed account of the characteristics of the *streak* that we have observed so far, and discusses some of the procedures that we have adopted to deal with the *streak* when it is present.

The following is a brief summary of the impact on science operations: **When present the *streak*:** will preclude the use of search-and-track mode for FES acquisitions, may hamper identification of the target field, and will preclude tracking on any guide stars which fall in the affected portion of the FES. All of these may result in some decrease in efficiency in setting up exposures, and will increase the number of targets requiring a blind offset. When the *streak* covers enough of the aperture plate to get light into the LWLA, then long LWP, low dispersion spectra may not be feasible. A recent two hour LWP exposure taken when the *streak* was strong showed a noticeable spectrum (filling the aperture). We have not

seen any affect in SWP spectra. Since the *streak's* appearance we have been performing many quick tests and analyses, but we are still in the process of characterizing and understanding this phenomenon. It's (so far) unpredictable nature has meant that it is difficult to assess whether or not it will be present after any given maneuver, and it it therefore difficult to give advice to the Guest Observers with complete certainty. For example, the *streak* is generally less likely to be present at lower β angles, but it has been seen there. Please read the Weinstein & Carini article for details about how this may affect your particular program.

n.b. In spite of these difficulties we have been steadily obtaining the spectra that our Guest Observers wanted. While there has been some decrease in our observing efficiency (fortunately we started out with a very high efficiency), we have, in almost all cases, been able to achieve the science objectives of a given shift. As we adopt and initiate new techniques, we are learning to better cope with the problem when it appears. Though we have had to make only minor adjustments to the schedule so far, it is likely that if the problem persists it will cause some impact on science scheduling, and we are discussing these scenarios also.