Contents

List of Figures

List of Tables

Summary

The results reported here demonstrate that the HETG is performing essentially as designed and predicted. This is a significant conclusion that could only come from the full system (HRMA-HETG-ACIS-S) testing carried out at XRCF. See, for example, the measured absolute HETGS effective area curves in Section 7.7, the detailed agreement between the predicted effective area "bumps and wiggles" and those measured in Figure 7.28, and the ability of **MARX** to accurately model the LRF as in Figures 6.10 and 6.11.

The XRCF testing also proved valuable in identifying two minor effects, due to fabrication non-idealities, that were not predicted and would have been confusing or impossible to diagnose in flight; these are the MEG misaligned gratings (Section 6.4) and the HEG scattering (Section 6.6). Using XRCF data the mis-aligned gratings have been measured and included in **MARX** 2.20, Figure 6.7. Theoretical work has quite satisfyingly explained the measured HEG scatter, Figures 3.23 and 3.24.

There remains a small ("5mm") discrepancy between XRCF measurements and expectations based on the subassembly periods and locations of the HETG and LETG at XRCF, Section 5.2.2. Flight data will either confirm the discrepency (indicating the offset is in the flight-hardware) or not show the discrepency (suggesting an XRCF placement error.) In either case, AXAF will be able to provide an accurate absolute wavelength scale for astrophysical lines.

A final digesting of all the results presented here and in other calibration reports is underway. The main outcome of this process will be a fine tuning of the HETG Calibration Products, for example by including the detailed polyimide edge structure around the O-K edge, Figure 3.11, and updating error estimates for the efficiency values.

The information and results presented here are the work of both the HETG Science Team and the ASC.

- Dan Dewey, October 26, 1998

HETG ground calibration information and post-publication updates are available on-line at:

`http://space.mit.edu/HETG/xrcf.html` .