



## Cycle 10 Grating RMFs/ARFs

### Caveats and Notes

We have prepared sample grating RMFs and corresponding ARFs for proposal planning purposes. As in the CY09 release, all of the GRMF files below were built with `mkgrmf`, using the latest LSF parameter data for the HETG/ACIS-S, LETG/ACIS-S, and LETG/HRC-S configurations. In all cases, the grating pixel randomization, `RAND_TG` is set to 0 pixels (turned off).

The ACIS-related gARFs were built with the CIAO script `fullgarf`, using PHA2 files from specific archival observations and the appropriate GRMF energy grid as the seed energy grid. They therefore include dither, and do not have exactly the nominal aimpoints as their source positions. The configuration information, including `SIM_Z` position and ObsID numbers, are included in the GARF headers.

The ACIS-S configuration effective areas (\*.garf or \*.arf) were derived using CIAO 3.4, CALDB 3.4.1, including the latest ACIS contamination model file `acisD1999-08-13contamN0004.fits`, with the time delay value set at 358732865.184s, corresponding to the UTC date 2009-05-15T00:00:00, or half-way through the CY10 observation period. For the HRC-S configurations, all effective areas were derived from CIAO as well, using the latest QE and QE uniformity calibrations.

To download individual files, <Shift>-click on the filename. The complete set of responses is available as a gzipped tarfile from the anonymous FTP site `asc.harvard.edu` in the directory `/pub/caldb/CY10/`. *Notice: This tarfile has been upgraded to version 2 as of 06 March 2007.*

*Table 1: Cycle 10 Grating Responses.*

<i>Configuration</i>	<i>Grating Type</i>	<i>Order</i>	<i>gRMF Filename</i>	<i>gARF Filename</i>	<i>Source ZOFFSET, YOFFSET (arcmin)</i>
HETG/ACIS-S	HETG	0	<a href="#">aciss hetg0 cy10.rmf*</a>	<a href="#">aciss hetg0 cy10.arf</a>	-1.02389, -0.33  gRMFs were built with <code>mkgrmf</code> *Zeroth-order RMF is imaging rmf built with
	HEG	1	<a href="#">aciss heg1 cy10.grmf</a>	<a href="#">aciss heg1 cy10.garf</a>	
		-1	<a href="#">aciss heg-1 cy10.grmf</a>	<a href="#">aciss heg-1 cy10.garf</a>	
		2	<a href="#">aciss heg2 cy10.grmf</a>	<a href="#">aciss heg2 cy10.garf</a>	
		-2	<a href="#">aciss heg-2 cy10.grmf</a>	<a href="#">aciss heg-2 cy10.garf</a>	
3	<a href="#">aciss heg3 cy10.grmf</a>	<a href="#">aciss heg3 cy10.garf</a>			
	-3	<a href="#">aciss heg-3 cy10.grmf</a>	<a href="#">aciss heg-3 cy10.garf</a>		

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	MEG	1 -1	<a href="#">aciss_meg1_cy10.grmf</a> <a href="#">aciss_meg-1_cy10.grmf</a>	<a href="#">aciss_meg1_cy10.garf</a> <a href="#">aciss_meg-1_cy10.garf</a>	<a href="#">mkacisrmf.</a>
		2 -2	<a href="#">aciss_meg2_cy10.grmf</a> <a href="#">aciss_meg-2_cy10.grmf</a>	<a href="#">aciss_meg2_cy10.garf</a> <a href="#">aciss_meg-2_cy10.garf</a>	
		3 -3	<a href="#">aciss_meg3_cy10.grmf</a> <a href="#">aciss_meg-3_cy10.grmf</a>	<a href="#">aciss_meg3_cy10.garf</a> <a href="#">aciss_meg-3_cy10.garf</a>	
LETG/ACIS-S	LETG	0	<a href="#">aciss_letg0_cy10.rmf*</a>	<a href="#">aciss_letg0_cy10.arf</a>	-2.73038, -0.33
	LEG	1 -1	<a href="#">aciss_leg1_cy10.grmf</a> <a href="#">aciss_leg-1_cy10.grmf</a>	<a href="#">aciss_leg1_cy10.garf</a> <a href="#">aciss_leg-1_cy10.garf</a>	gRMFs were built with <a href="#">mkgrmf</a> *Zeroth-order RMF is imaging rmf built with <a href="#">mkacisrmf.</a>
		2 -2	<a href="#">aciss_leg2_cy10.grmf</a> <a href="#">aciss_leg-2_cy10.grmf</a>	<a href="#">aciss_leg2_cy10.garf</a> <a href="#">aciss_leg-2_cy10.garf</a>	
		3 -3	<a href="#">aciss_leg3_cy10.grmf</a> <a href="#">aciss_leg-3_cy10.grmf</a>	<a href="#">aciss_leg3_cy10.garf</a> <a href="#">aciss_leg-3_cy10.garf</a>	
LETG/HRC-S	LEG	0	N/A	<a href="#">hrcs_letg0_cy10.arf</a>	
		1 -1	<a href="#">hrcs_leg1_cy10.grmf</a> <a href="#">hrcs_leg-1_cy10.grmf</a>	<a href="#">hrcs_leg1_cy10.v2.garf*</a> <a href="#">hrcs_leg-1_cy10.garf</a>	
		2 -2	<a href="#">hrcs_leg2_cy10.grmf</a> <a href="#">hrcs_leg-2_cy10.grmf</a>	<a href="#">hrcs_leg2_cy10.garf</a> <a href="#">hrcs_leg-2_cy10.garf</a>	
		3 -3	<a href="#">hrcs_leg3_cy10.grmf</a> <a href="#">hrcs_leg-3_cy10.grmf</a>	<a href="#">hrcs_leg3_cy10.garf</a> <a href="#">hrcs_leg-3_cy10.garf</a>	
		4 -4	<a href="#">hrcs_leg4_cy10.grmf</a> <a href="#">hrcs_leg-4_cy10.grmf</a>	<a href="#">hrcs_leg4_cy10.garf</a> <a href="#">hrcs_leg-4_cy10.garf</a>	
		5 -5	<a href="#">hrcs_leg5_cy10.grmf</a> <a href="#">hrcs_leg-5_cy10.grmf</a>	<a href="#">hrcs_leg5_cy10.garf</a> <a href="#">hrcs_leg-5_cy10.garf</a>	
		6 -6	<a href="#">hrcs_leg6_cy10.grmf</a> <a href="#">hrcs_leg-6_cy10.grmf</a>	<a href="#">hrcs_leg6_cy10.garf</a> <a href="#">hrcs_leg-6_cy10.garf</a>	

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					geometry of plate gaps and edges. See item 3 in <a href="#">Caveats and Notes</a> below.
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### Caveats and Notes

1. These gARFs and gRMFs are for *proposal planning purposes only*. They should not be used for analysis of any real Chandra data. The [Grating Spectroscopy threads](#) give instructions for building an observation-specific gRMF and gARF.
2. **LETG/HRC–S proposal planners:** the above gRMFs and gARFs for the LETG/HRC–S configuration must be used in gRMF/gARF pairs for appropriate response settings to be employed. The LETGS group also has *convolved* gRMFs and gARFs, known as "gRSP" files, available for download on the [LETGS Effective Area webpage](#). That webpage explains the proper use and interpretation of these files.
3. **A Note concerning the LETGS Encircled Energy Fraction:** The LETG/HRC–S configuration requires that an encircled energy fraction, or EEARF, be considered in order to apply the appropriate response for these grating data. With the release of CalDB 2.27 in July 2004, this correction is actually included in the GRMF, and hence should not be included in the GARF. Therefore, the LETG/HRC–S GARFs (all orders) for LETG/HRC–S have been built so that the encircled energy fraction is not applied to the GARF. HOWEVER, in order for the users results to agree with the results of PIMMS for this configuration, one must either use the GRMF and GARF in tandem (in XSPEC, Sherpa, or similar fitting environment), or one must apply the encircled energy fraction to the GARF. The GARFs may be modified using the script [factor\\_rsp](#), which is described in the documentation file [factor\\_rsp.txt](#). The script may be [shift-click] downloaded for use in any shell with isis-script in one's path, such as a shell configured for CIAO 3.4.1.

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URL:  
[http://cxc.harvard.edu/caldb/prop\\_plan/grating/index.html](http://cxc.harvard.edu/caldb/prop_plan/grating/index.html)  
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