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Imaging Spectroscopy

After extracting source and background PI or PHA spectra from an imaging observation, the appropriate response files (ARF, RMF) are created so that the data may be modeled and fit. In the case of multiple or extended sources, weighted ARF and RMF are built for the spectral analysis.

- **Extracting Spectra and Creating Response Files:**

  The recommended use for the `specextract` script has been changed. It has been determined that the `mkwarf` tool, which is used for ARF generation by `specextract`, may not produce accurate results for point sources. The `mkarf` tool, used by `psextract`, is preferred for point source extraction.

  `specextract` should be used for the analysis of extended sources only. Users working with point sources should instead use the `psextract` script. *Analysis of point sources that was done with `mkwarf`/`specextract` should be redone with `mkarf`/`psextract` for the most accurate results*, e.g. taking bad columns into account.

  In certain cases, the `mkacisrmf` tool will need to be run separately to create the best possible RMFs for ACIS observations; see the thread for details.

  - ♦ Using the ACIS "Blank–Sky" Background Files
    Uses: the `acis_bkgrnd_lookup` script; the `lc_clean.sl` S–Lang script
  - ♦ Using specextract to Extract ACIS Spectra and Response Files
  - ♦ Using psextract to Extract ACIS Spectra and Response Files for Pointlike Sources
    Uses: the `psextract` script; the `acis_fef_lookup` script
  - ♦ Coadding Spectra and Weighted Responses
    Uses: the `acisspec` script
  - ♦ Creating ACIS RMFs with mkacisrmf

- **Step–by–step Analyses:**

  These threads give step–by–step instructions for creating spectra and response files. Note that all of the tasks described here are executed automatically by the `specextract` script.

  - ♦ Using the ACIS "Blank–Sky" Background Files
    Uses: the `acis_bkgrnd_lookup` script; the `lc_clean.sl` S–Lang script
  - ♦ Weighting ARFs and RMFs: multiple sources
    Uses: the `show_wgt.sl` S–Lang script
  - ♦ Step–by–Step Guide to Creating ACIS Spectra for Pointlike Sources
    Uses: the `acis_fef_lookup` script

- **Deprecated Threads:**

  The analyses shown in this thread should now be done with the `specextract` script instead. The thread will be removed in a future CIAO release.

    ♦ <u>Extracting Extended Source Spectra and Responses</u>
       Uses: the `acisspec` script
- **General:**

    ♦ <u>A Note on HRC Spectra</u>
    ♦ <u>Displaying the FEF Regions Covered by a Source</u>
       Uses: the `regions.sl` S–Lang script
    ♦ Why topic: <u>ACIS QE Degradation</u>
    ♦ <u>Correcting Responses for ACIS Contamination</u>

- See the <u>Sherpa threads</u> for information on fitting spectral data.