MEGARA Data Reduction Pipeline.

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Abstract

The data reduction software for MEGARA, **megaradrp**, is an open source (GPLv3) Python package.

- Devel: `https://github.com/guaix-ucm/megaradrp`
- Issues: `https://github.com/guaix-ucm/megaradrp/issues`
- Docs: `https://megara-drp.readthedocs.io/`
- PyPI: `https://pypi.org/project/megaradrp/`

The **megaradrp** package can be used both as a standalone program or as a component of the GTC control system. The same pipeline processes MEGARA images during the observation and offline, although using different reduction strategies.
megaradrp provides two methods for extraction:

- **TraceMap** is fast, well suited for online extraction at the telescope. The peak of the spectra are detected in halogen lamp images and then a fixed extraction window is applied to images with the same instrumental configuration. The window is half the distance between peaks.

- **ModelMap** is slow, as it models the PSF as a bivariate Gaussian along the spectral and spatial direction of halogen map images. At different positions along the dispersion axis, the algorithm fits iteratively the 600 peaks. Then, a spline is fitted to the parameters to recover the model for all the original image.