

Reducing EMIR spectroscopic data with Python.

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Abstract

EMIR, the near-infrared camera and multi-object spectrograph operating in the spectral region from 0.9 to 2.5 μm , has been commissioned at the Nasmyth focus of the Gran Telescopio CANARIAS. One of the most outstanding capabilities of EMIR is its multi-object spectroscopic mode which, with the help of a robotic reconfigurable slit system, allows to take around 53 spectra simultaneously. A data reduction pipeline, `pyemir`, based on Python, is being developed in order to facilitate the automatic reduction of EMIR data taken in both imaging and spectroscopy mode. This package, as well as the auxiliary package `numina`, are both available at GitHub (<https://github.com/guaix-ucm>). The user's guide is being currently written after the experience gained analysing the commissioning data, and will be soon available in the documentation hosting platform Read the Docs. Focusing on the reduction of spectroscopic data, some critical manipulations are the geometric distortion correction and the wavelength calibration. Using a large set of tungsten and arc calibration exposures, both calibrations have been modelled for any arbitrary configuration of the multi-object slit system. This model can be easily employed to obtain a preliminary rectified and wavelength calibrated EMIR spectroscopic image without additional calibration images. This facilitates both the on-line quick reduction of the data at the telescope and the off-line detailed reduction of the data by the astronomer. This work was funded by the Spanish Programa Nacional de Astronomía y Astrofísica under grant AYA2016-75808-R. (See poster).