Data processing of KMOS data: FAQs

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Data processing of KMOS data: Frequently asked questions

- **What is the best way to reduce KMOS data?**

Answer: We recommend to use the Reflex workflow to reduce all KMOS data.

A detailed tutorial is available at ftp://ftp.eso.org/pub/dfs/pipelines/kmos/kmos-reflex-tutorial-1.1.pdf

- **Single-spaxel spectra show wavelength-dependent fluctuations in the continuum; what is it happening?**

Answer: Exposures of bright and point-like sources taken in good seeing conditions (e.g., ≤ 0.5 arcseconds) can have wavy-pattern in the shape of the continuum. This is due to the fact that the spatial point-spread-function (PSF) of the source is not properly sampled by the detector, and the reconstruction algorithm is not able to reconstruct the shape of the PSF. Using the Cubic Spline method in the reconstruction of standard star and scientific spectra help in mitigating the problem. If the patterns are still present, it is recommended to extract the source spectrum over a circular aperture (e.g., using the recipe kmos_extract_spec, or visualization software like QFitsView); a radius of 2-3 pixels usually levels the fluctuations out and fixes the problem.

Alternatively, once can smooth with a Gaussian Kernel the reconstructed cube or directly the raw data along the spatial direction. A Gaussian kernel with a sigma of 1 pixel or a top-hat kernel of 3 pixels are enough. The disadvantage of the kernel smoothing, is that the spatial resolution is deteriorated in both direction (if convolving the cube) or along one direction (if convolving the raw data). The recommended procedure is the extraction over a circular aperture. Among the alternative approaches, the recommended is to convolve the reconstructed cubes to avoid elongated PSF in the final results.

- **What is the wavelength reference system of the emission lines of the comparison Ar and Ne arc lamps provided in the static calibration?**

Answer: The wavelengths listed in the atlas provided with the static calibration files refer to vacuum values.

- **I do not obtain the expected K and H magnitude of my target from the observed KMOS spectra with the HK grism. What is happening?**

Answer: we note an error of a factor 1.6 in the conversion from ADU for spectra observed with the HK grism. Multiplying the observe spectrum by this factor correct the current error of the pipeline in the HK grism.