

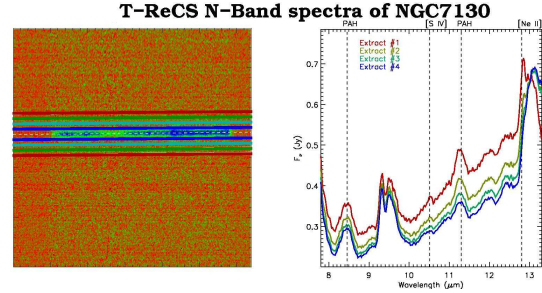
REDCAN: CANARICAM PIPELINE FOR THE REDUCTION AND ANALYSIS OF THE SPECTROSCOPIC DATA

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The mid-infrared camera and spectrograph CanariCam is one of the first light instruments to be operative at GTC. To exploit the CanariCam guaranteed observing time, the PIRATAS team was formed. The PIRATAS team has 100 hours of guarantee time to do imaging and spectroscopy of active galactic nuclei (AGN). We have developed the pipeline RedCan to quickly analyze upcoming large amount of data. The main goal is to produce a software able of taking a list of observations and reduce them without the minimum number of inputs.

Methodology. The process followed by the pipeline is the following: (a) Identification of files (e.g. acquisition, standard or target) and automatic identification of the associated standard to the target. (b) Flat-fielding correction. (c) Stacking of data, including the exclusion of bad chop-nods and registering. (d) Flux calibration of images and calculation the total flux of the brightest source for each stacked image. (e) Computation of slit losses when acquisition images are available. (f) Wavelength calibration using the sky spectra. (g) Trace determination of standard star and spectrum. (h) Extraction of spectra with the desired extraction region. Several apertures and offsets can be selected. The observer can choose between extended or point-like source. In the latter, the trace of the standard is selected to extract the spectrum of the target. (i) Computation of the average spectrum when more than one spectrum is available for the same source.

Running RedCan. To try RedCan you only need to untar a file and link redcan to your machine. Then, go to the directory where the data are placed. The main input is a list of fits files. It can be run as: `redcan -d`: To select the default parameters. A list of files is required as an input. It can be included as `redcan -d inputfile.lst` or it will asked by the pipeline. `redcan -i`: To select the parameters interactively. `redcan infile.lst 0 3 [2, 10, 20, 30, 50] 0`: To execute RedCan with certain param-



eters. `redcan -h`: To show the help on the input parameters.

RedCan produces two sub-directories: PRODUCTS and OUTPUTS. PRODUCTS shows all the intermediate states of the pipeline. This allows checking the procedures and record postscript files with the main plots. OUTPUTS contains the main outputs of the pipeline. The final spectra are written as FITS files.

We have taken the advantage of the similarities between T-ReCS and CanariCam instruments to produce a pipeline for both instruments. Since T-ReCS is a fully tested instrument with an extensive archive, we have been able to produce the pipeline before the CanariCam commissioning. Figure 1 shows an example of the combination of 11 archival spectra observed with T-ReCs for the AGN NGC 7130.

The commissioning of CanariCam was performed in June-July this year. A good set of data for spectroscopy was observed in both N and Q bands. RedCan was able to produce a quick analysis of the data (see C. Packham's presentation that made use of RedCan to extract the spectrum of NGC 7027).

RedCan has been implemented by the author with fundings from the C5D00070-2006. RedCan is written merging Python, IDL and C-Shell routines. It uses the astronomical IDL libraries and the GEMINI routines under pyraf. The latest version of the pipeline and its manual can be downloaded here: <http://dl.dropbox.com/u/3484086/RedCan.tar.gz>. Users of RedCan are neglected to acknowledge its use and to the C5D00070-2006 grant for the MICINN.

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