

IDEALCAM: AN IDL GUI PACKAGE FOR CANARICAM DATA REDUCTION AND ANALYSIS

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We are developing a software called IdealCam for the users to reduce and analyze the multi-extension mid-infrared FITS files. IdealCam is optimized for processing the imaging and polarimetric data of CanariCam, and also support various types of data delivered by the Michelle and T-ReCS. The software is written in IDL, and all functions can be run from a GUI (Graphic User Interface, see Figure 1).

CanariCam (Telesco et al. 2003) is a multi-mode mid-infrared camera built at the University of Florida for the Grand Telescopio CANARIAS (GTC). Commissioning of this state-of-the-art instrument is nearly complete (the reader is referred to the contributions by Telesco et al. 2012, Packham et al. 2012, for more information on the current status of CanariCam).

Like most other astronomical mid-IR cameras, CanariCam needs to work with chop and nod to overcome the strong and variable thermal background emitted by the sky and the telescope. Therefore, each raw CanariCam FITS files contains a large number of frames (i.e., *save sets*) rather than a single 2D data array. The multimode nature of CanariCam adds more complexity to the FITS structure, as different modes save data in different ways in the raw FITS files.

To let the CanariCam users reduce their data without dealing with the complex FITS structure, we developed IdealCam (Interactive Data Reduction and Analysis for CanariCam). IdealCam also provides quick and easy access to a variety of analysis tools that are frequently used by mid-IR observers, and fully support the polarimetric data produced by CanariCam.

IdealCam is available for download at www.astro.ufl.edu/~dli/web/IDEALCAM.html. The current version (v1.2) is capable of the following tasks:

FITS viewer. Open and display FITS files (stacked image and individual save sets) delivered by CanariCam, Michelle, or T-ReCS.

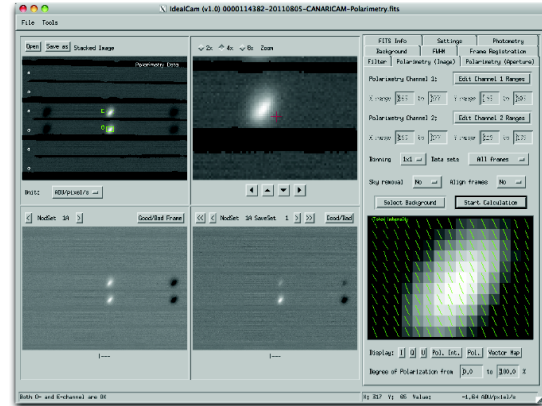


Fig. 1. The GUI of IdealCam contains two major panels. The left panel has four screens to display the stacked image and selected chop/nod frames, while the right panel provides entries to a variety of reduction and analysis tools.

Data reduction. Frame registration, filtering, bad pixel correction, bad frame removal, polarimetric reduction (estimating the Stokes parameters and displaying the vector map), etc.

Image analysis. Aperture photometry, measurements of the sky background and noise level, stellar profile fitting, etc.

Auxiliary tools. Build-in library of Cohen standards and FITS header viewer, etc.

Additional capabilities, like measurements of the Strehl ratio and instrument sensitivity, jitter correction, etc., will be added in future version. All functions mentioned above are integrated into a GUI (Figure 1). IDL programming is therefore not required to run IdealCam.

Note that IdealCam is optimized for reducing the imaging and polarimetric data. To reduce the spectroscopic data of CanariCam, another software called RedCan is required. We refer the reader to the contribution by Gonzalez-Martin et al. (2012) for more details on RedCan.

REFERENCES

- González-Martín, O., et al. 2013, RevMexAA (SC), 42, 118
- Telesco, C. M., et al. 2013, RevMexAA (SC), 42, 81
- Telesco, C. M., et al. 2003, Proc. SPIE, 4841, 913

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