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RESULTS OF HIGH-SPATIAL RESOLUTION MID-IR IMAGING OF NGC7172

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We present results from an analysis of high-spatial resolution images of the Seyfert 2 galaxy NGC 7172, as observed by T-ReCS on Gemini South at 10.4 microns. We model the IR SED of this AGN using our observations and archival data. We find that a best fit model describes the observed SED with a reddened stellar population and 2 thermal components.

NGC 7172 is an edge-on spiral galaxy, with a prominent optical dust lane obscuring the Seyfert 2 AGN. High-spatial resolution N-band (10.36μm, $\delta\lambda$=5.27μm) observations conducted under fair conditions at the 8-meter Gemini South observatory using the facility mid-IR instrument T-ReCS, show spatially resolved structure to a scale of 101 pc. We find a flux of 80$\pm$5.5 mJy from aperture photometry centered on the unresolved nuclear region of the AGN. We find mid-IR emission extending from the nuclear region out to a radius of 1.2 kpc which both parallels, and overlaps the location of an observed optical dust lane (Malkan et al. 1998). We observe emission from this extended region ranging from 16% of the nuclear flux at a radius of 300 pc extending out to to an upper limit of 5% of the nuclear flux at a radius of 1.2 kpc.

The 600s observation of NGC 7172 was taken following standard mid-IR chop/nod observing techniques. The data were reduced using the IRAF Gemini routines and further processed using in-house–developed surface-fitting routines. NGC 7172 was flux-calibrated using HD 189831 (Cohen et al. 1995). Surface-fitting routines were developed to remove residual noise remaining in the images following the standard chop/nod frame recombination of the mid-IR data. The method fits a low-order polynomial to the background of the image, which is then subtracted off, reducing noise uncertainties to less than 5% when applied to known standard stars.

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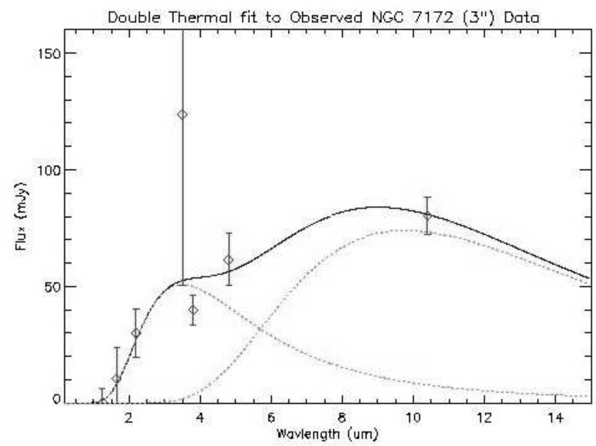

Fig. 1. The mean observed IR emission can be simply modeled using 3 components. A reddened stellar component which dominates the emission down to 1.2μm (subtracted prior to this plot), and 2 thermal components, which support the theory of dust re-radiation of AGN emission at temperatures of 296 K and 820 K. Data is taken from our observed 10.4μm emission and archival IR observations (3″) taken from Alonso-Herrero et al. (2001), and Kotilainen et al. (1992).

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