

## MORPHOLOGICAL PROPERTIES OF UNUSUALLY WARM IRAS GALAXIES

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A sample of unusually warm IRAS galaxies with spectral energy distributions peaking at 60 $\mu$ m is studied. The complete sample consisting of 21 known galaxies and 40 previously unidentified galaxies is selected according to the following criteria: all galaxies in IRAS Point Source Catalogue with high quality detections at 25 $\mu$ m and 60 $\mu$ m, FIR fluxes such that  $4 > f_{60}/f_{25} > 1$  and  $f_{60}/f_{100} > 1$ , and a galactic latitude of  $|b| > 10^\circ$ . The colour criteria select against galaxies with a significant cool dust component and the hotter dust present is presumably circumnuclear (Vader et al., 1988). CCD imaging reveals a morphological dichotomy in our sample - the galaxies are either relaxed systems (E/S0) or interacting (double nuclei, tidal features etc.). The relatively fast process of merging may link these two types of systems.

Only morphologically relaxed systems are considered here. An unsharp masking (Schweizer and Ford, 1985), and a two-colour (Sparks et al., 1985) technique were used to search for low surface brightness details and for dust. Of the 11 galaxies examined, 5 show features and 6 have no apparent fine structure (Table 1). An unsharp masked R frame and a B-R frame contour plot of 10567 (Fig. 1) reveal an extension with 3 red, presumably dusty, patches. This object has an unusually large far-infrared excess. An unsharp masked B frame contour plot, and a B-I colour frame of 14164 reveal 3 blue central knots (Fig. 2). (In both figures east is to the top and north is to the left of the page.)

This preliminary study shows that at least 50% of the morphologically relaxed galaxies in our sample have low surface brightness features (shells, dust) that may be a clue to the nature of their far-infrared emission.

TABLE 1

OBJECT	TYPE	$\log(L_{60}/L_B)$	$m_B$	FEATURES
05570-8123	Sy 2	0.96	16.7	dust lane
09497-0122 <sup>1</sup>	Sy 1	0.48	15.3	no apparent features
10567-3323	HII	1.70	17.9	disturbed, 3 red patches
13329-3402 <sup>2</sup>	Sy 1	0.10	14.6	no apparent features
13370-3123 <sup>3</sup>	HII	0.12	11.0	dust lane; (Sersic et al., 1972)
14082+1347	Sy 2	1.10	15.8	interleaving shells
14164-7236	Sy 2	1.24	16.9	disturbed, 3 central knots
16343-1023	...	...	19.5	no apparent features
16380-8120	...	...	...	no apparent features
18526-2445	...	1.34	17.2	no apparent features
20253-8152	HII	0.96	17.6	no apparent features

1) Mkn 1239 , 2) MGC-6-30-15 , 3) NGC 5253

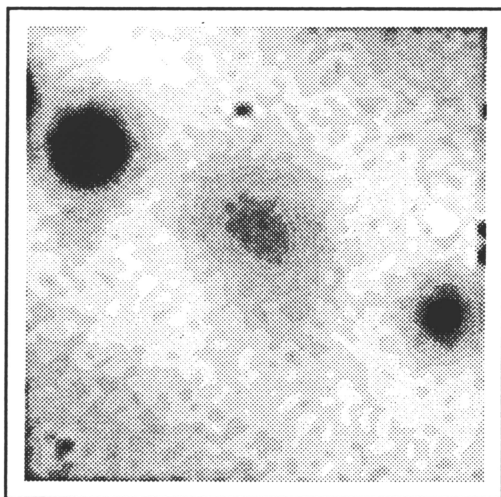


Fig. 1a Unsharp masked R frame (100"x100") of IRAS 10567.

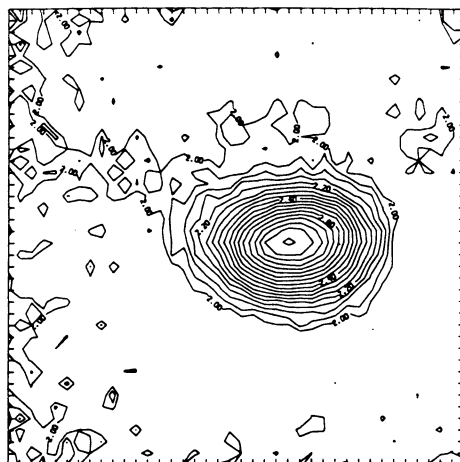


Fig. 1b B-R contour plot of IRAS 10567 ; tickmark interval spacing is 0.5".

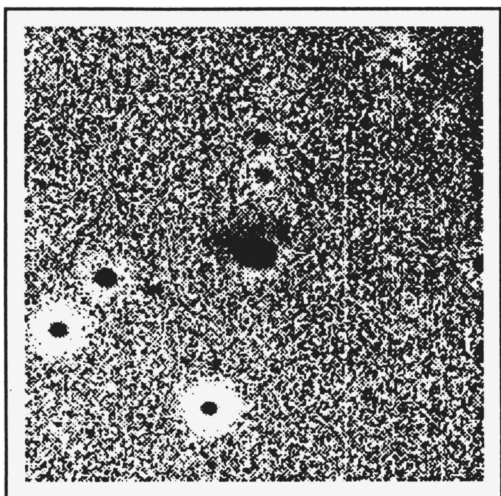


Fig. 2a Unsharp masked B frame (25"x25") of IRAS 14164.

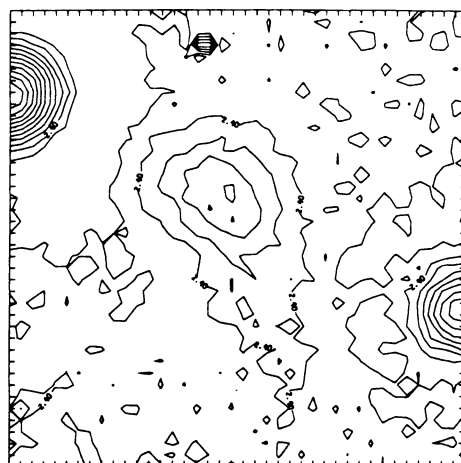


Fig. 2b B-I contour plot of IRAS 14164 ; tickmark interval spacing is 0.125".

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