

OPTICAL EMISSION IN SOME LUMINOUS IRAS GALAXIES

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RESUMEN. Comunicamos observaciones de algunas galaxias IRAS luminosas. Diagramas de diagnóstico de las líneas de emisión fueron utilizados para clasificar los objetos. Comparamos estos resultados con los obtenidos por medio del diagrama infrarrojo color-color.

ABSTRACT: We report observations on some luminous IRAS galaxies. In this preliminar analysis, we use intensity ratios of optical emission-lines plotted in diagnostic-diagrams to classify the objects. Comparisons are made with results obtained from infrared colour-colour diagrams.

Key words: GALAXIES-SEYFERT — INTERSTELLAR MATTER

ve southern galaxies selected from the IRAS Catalogue with no optical data previously reported have been observed in the $\lambda 4700$ - $\lambda 7000\text{\AA}$ range with the machine at CASLEO. From the emission-line intensity ratios plotted in the diagnostic diagrams (Osterbrock 1988) we found that IRAS-383, IRAS-502, and AS-513 are Seyfert 2 galaxies; IRAS-483 is a LINER ($[\text{OI}]/[\text{OIII}] \approx 0.5$), and AS-497 is a Seyfert 1 galaxy with a very broad (FWHM > 10000 km/s) blue-shifted $\text{H}\alpha$ component. In Figure 1 we plot our data on the $\log([\text{OIII}]\lambda 5007/\text{H}\beta)$ vs $\log([\text{NII}]\lambda 6583/\text{H}\alpha)$ diagram, in which we also show the effect of including a broad component of the Balmer lines in the ratios. These results are in close agreement with those obtained from the infrared $\alpha(60,25)$ vs $\alpha(100,60)$ colour-colour diagram (Sekiguchi 1987), as shown in Figure 2.

ir galaxies have $\log(\text{LIR}/L_0) \approx 11$ indicating that they are in the upper limit of luminosity for an active galaxy (Sekiguchi 1987), the exception being a Seyfert 1 IRAS-497 with $\log(\text{LIR}/L_0) \approx 10$. For all of them the $\text{H}\alpha/\text{H}\beta$ ratio is larger than 4.2 suggesting, as previously noted by Osterbrock and De Robertis (1985), that the IRAS "warm" galaxies are heavily reddened.

REFERENCES

- Osterbrock, D. 1988 Astrophysics of Gaseous Nebulae, second edition.
 Osterbrock, D., and De Robertis, M. M. 1985 PASP, 97, 1129.
 Sekiguchi, K. 1987 Ap.J., 316, 145.

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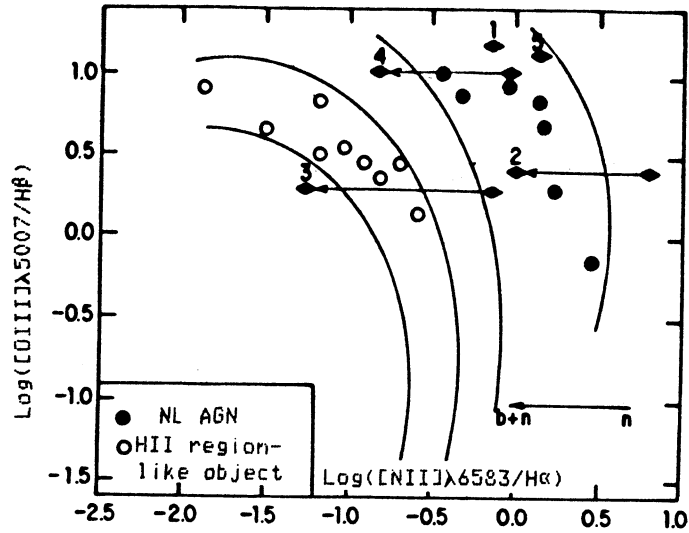


Figure 1. $[OIII]\lambda 5007/H\beta$ vs $[NII]\lambda 6583/H\alpha$ diagnostic diagram. (1) IRAS-383, (2) IRAS-483, (3) IRAS-497, (4) IRAS-502, (5) IRAS-513. b and n refer to the broad and narrow components respectively. The arrows show the effect of including the broad component of $H\alpha$ in the ratios.

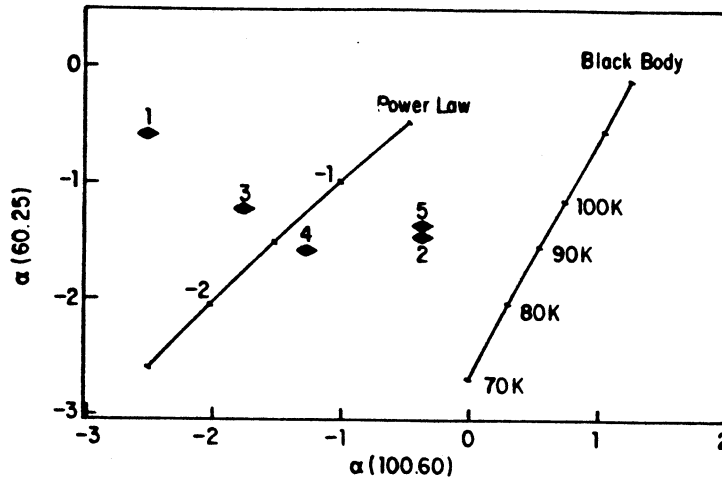


Figure 2. $\alpha(60,25)$ vs $\alpha(100,60)$ Infrared colour-colour diagram. Objects labelled as in Figure 1.

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