

INFRARED RADIATION FROM COMPACT OBJECTS

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Abstract. Current infrared observations of Seyfert galaxies, QSOs, and compact galaxies in the lists of Markarian and Zwicky have been reviewed. The bright Seyfert galaxies generally show similar infrared excesses at the longer wavelengths accessible from the ground. Only NGC 1068 has been observed, by F. J. Low, in the 100μ region; if the spectral distributions of all Seyfert galaxies are similar to that of NGC 1068, the intrinsic luminosities vary from 1 to 100×10^{44} erg s⁻¹. Measurements by Kleinmann and Low, Gillett and Stein, Pacholczyk, and Penston and Neugebauer at 10 and 2μ apparently confirm variability of NGC 1068 and NGC 4151 on a time scale too short to allow the infrared radiation to come predominantly from dust shells.

The published infrared observations of QSOs have been limited to wavelengths shorter than 3.5μ except for 3C 273. The energy distributions either show a power law fall-off, a flat spectrum, or a combination of these two. Those four QSOs which show large variability all have steep power law spectra. If one accepts that the distance of QSOs are cosmological, the extrapolated luminosity at 2μ of several QSOs exceeds that of 3C 273. The integrated luminosity of 3C 273 depends critically on the spectrum in the unobserved 10–1000 μ region, but is probably in the range 10^{47} to 10^{48} erg s⁻¹.

The infrared observations of the compact Markarian and Zwicky objects show a correlation between the infrared excess and the broad optical emission lines. Presumably the infrared can be used to differentiate between the stellar and non-thermal components of the radiation from these objects.