with the strongest nonstellar contributions to their infrared continua, Markarian 609, 1018, and 1218, are the objects for which large ultraviolet fluxes and/or optical variability preclude heavy reddening of the nonstellar continuum and the broad-line region. Their infrared properties are similar to Seyfert galaxies as are their ultraviolet continua and/or current optical properties. The remaining objects, Mrk 372, 516, 1179 and V Zw 317 display near-infrared fluxes which are dominated by starlight in its aperture. With the exception of Mrk 516, all have 10 μm fluxes ≤ 10 mJy and spectral indices from 3.5 μm to 10 μm of α ≤ 1. For Mrk 516, the optical nonstellar, the 3.5 μm nonstellar, and the 10 μm fluxes are inconsistent with a single, reddened power law. In our sample of Seyfert 1.8 and 1.9 galaxies we do not find evidence for obscuration of the extent expected if the steep, broad-line Balmer decrements were modified by reddening from intrinsic values typical of the majority of Seyfert 1 galaxies.

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16.03
The IRAS Galaxy 0421+04006: An Active Spiral Galaxy with Extended Radio Lobes


The infrared-bright galaxy 0421+04006 detected by IRAS at 25 and 60 μm has been studied at optical, infrared and radio wavelengths. It is a luminous spiral galaxy emitting 10^2 M☉ from far-infrared to optical wavelengths. Optical spectroscopy reveals a Seyfert 2 emission-line spectrum, making 0421+04006 the first active galaxy selected from an unbiased infrared survey of galaxies. The fact that this galaxy shows a flatter energy distribution with more 25 μm emission than other galaxies in the infrared sample may be related to the presence of an intense active nucleus. The radio observations reveal the presence of a non-thermal source that at 6 cm shows a prominent double lobed structure 20-30 kpc in size extending beyond the optical confines of the galaxy. The radio source is three to ten times larger than structures previously seen in spiral galaxies and may represent a transition between the relatively small, weak sources seen in some active spirals and the stronger, larger ones seen in elliptical galaxies with active nuclei.

16.04
Optical and Infrared Observations of Hot IRAS Galaxies

W. F. Keeler, M. J. Lebofsky (U. Arizona)

We have obtained near-infrared photometry and optical spectra of 14 IRAS sources with 60-100μm color temperatures in excess of 50K and lying at least 30° away from the galactic plane. IR photometry was performed at J, H, and K using the MMT IR photometer, and spectra between 3500A and 6000A were obtained on the Steward Observatory 2.3m telescope using a spectrograph equipped with a blue-sensitive pulse-counting reticon.

We confirmed that 13 of the objects are galaxies with one object not securely identified. Strong emission lines were seen in 10 galaxies while 3 objects showed weak lines characteristic of starburst galaxies. The strong emission line galaxies are mainly Seyferts with 3 being Seyfert 1 galaxies and 4 being Seyfert 2 galaxies. The remaining 3 galaxies are similar to LINERs. The redshifts range from 0.0155 to 0.1115.

A similar size sample of IRAS galaxies selected from the Minnaert Survey with no color temperature constraint yielded only one Seyfert (Elston, Cornell, and Lebofsky 1985, submitted to Ap.J.). The efficacy of the 60-100μm temperature in selecting Seyferts has several ramifications including 1) hot dust may often be present in Seyferts, and 2) galaxies with a hot dust temperature which show starburst spectra should be examined for composite Seyfert/starburst behavior.

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16.05
The Velocity Field in the Active Galaxy NGC 7582


We present Fabry–Perot observations in H and [OIII] 5007 of the nearby, edge-on active galaxy NGC 7582. The velocity fields in the two emission lines are found to differ in the central 2 kpc.

The H velocity field is consistent with rotation in the plane of the galaxy, while the [OIII] 5007 emission line remains blueshifted relative to the systemic velocity across the central 2 kpc.

A computer simulation of the data consisting of a 1 kpc diameter, fast-rotating disk of HII regions, together with a filled conical outflow of high-excitation, photoionised gas reproduces many of the detailed features in the nuclear emission line profiles.

We speculate that the radio emission seen with the VLA originates in supernovae associated with the HII region disk.

16.06
The Influence of Galaxy Interactions on Nuclear Activity

Roc M. Cutri (Steward Obs.)

Observational and theoretical evidence in recent years have indicated an apparent connection between galaxy interactions and the presence of abnormal activity, such as bursts of star formation. The effect these interactions have on the nuclei of the participant galaxies has been probed through an investigation of the nuclear infrared properties of a statistically complete sample of interacting galaxies. Ten micron detections of these galaxies exceed the number expected if their nuclei followed a 10μm luminosity function similar to that of the Virgo spiral galaxies. This excess is a result of the unique 10μm luminosity distribution of the interacting galaxies which contains a base population of sources with luminosities similar to non-interacting sources, and a distinct secondary population roughly 20 times more luminous than the mean of the non-interacting galaxies. These 10μm-bright nuclei may account for the abundance of interacting galaxies found in infrared selected surveys, such as that conducted by IRAS. Nuclear activity is also evidenced in the interacting galaxy sample by abnormal near infrared colors. Nearly a factor of three more of the galaxies in interacting systems than non-interacting ones exhibit J-K colors outside the range defined by a normal galactic stellar population. Both the near and mid-infrared properties of the nuclei of the interacting galaxies indicate that galaxy encounters can influence and induce nuclear activity. The identification of the luminous population among the interacting sources suggests that interactions may