THE OCULAR GALAXY NGC 2535 AND ITS SMALL STARBURST COMPANION NGC 2536

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We present H I and radio continuum observations taken at the VLA with C and D arrays (resolution = 12″ = 2.9 kpc), ^{12}CO $J = 1 \rightarrow 0$ data from Onsala Space Observatory (resolution = 33″), and B and I-band images to study the ocular (eye-shaped) galaxy NGC 2535 interacting with its small starburst companion NGC 2536. In NGC 2535, we find widespread high velocity dispersion (30 km s^{-1}) in the H I gas and five unusually massive clouds with H I masses $\sim 10^8$ M$_\odot$. These clouds have no strong counterparts in the older stellar population. Since a similar phenomenon has been seen previously in two other interacting pairs, IC 2163/NGC 2207 and NGC 5774/5, enhanced turbulence and unusually massive gas clouds produced by gravitational instabilities in the gaseous disk may be a general feature of interacting spiral galaxies during the early phases of post-encounter evolution. A search for ^{12}CO $J = 1 \rightarrow 0$ emission at 11 positions in NGC 2535 and 1 position in NGC 2536 yielded two clear detections in NGC 2535, one at the center and the other on the tidal tail but close to the center. No CO emission was detected from the starburst galaxy NGC 2536. The massive H I clouds in NGC 2535 do not coincide with the most luminous blue knots, and most are not detected in CO emission; these clouds may be still in the process of formation. The starburst companion, NGC 2536, lies in an H I clump at the end of the tidal bridge of NGC 2535. In the clump, the combined H I mass of the bridge and NGC 2536 is 2×10^9 M$_{odot}$, and the two distributions have considerable overlap in velocity. The starburst may have been fuelled by gas accreted from NGC 2535.

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ISO OBSERVATIONS OF AGN

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The *ISO* satellite is currently observing with the PHOT instrument over a wide wavelength range all the objects in the CFA sample of Seyfert galaxies. It is unfortunate that although some observations have already been carried out, the data has not yet been delivered to us, thus we cannot present any *ISO* data here. We report, however, on a program of ground based observations in optical broad band, Hα and near-IR that we have been carrying out on the same sample of Seyfert galaxies, as preparatory work to combine with the *ISO* data. ur aim is to thoroughly study the CFA complete sample of Seyfert galaxies in the optical, near and far IR, in an attemp to search for similarities and differences as a function of wavelength between the Seyferts type 1 and 2s. The optical and near IR data have already been acquired with very good spatial sampling. Data reduction and analysis is in progress.

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NEAR–INFRARED VIEW OF THE NUCLEAR STARBURST REGION OF NGC 1808

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We present ∼1.0″ resolution imaging of Brγ , H_2 2.121 μm and [Fe II] 1.64 μm line and JHK continuum emission of the nuclear (20″ = 1.6 kpc diameter) region of the starburst galaxy NGC 1808. The continuum emission is smoothly distributed throughout the circumnuclear region and peaks on the nucleus. There is no morphological change with wavelength. Most of the continuum emission is produced by the evolved bulge stars, and not by hot dust or red supergiants.

The line emission is dominated by the nucleus but extended by ∼ 18″ (∼ 1.4 kpc) for all lines. The circumnuclear emission arises from distinct regions, forming a ring-like structure. Both Brγ and [Fe II] are well correlated with radio emission. There are, however, differences in the detailed morphology, that differentiate between hot spots dominated by supernova remnants and H II regions. The Brγ emission isolates the star forming activity, whereas radio and [Fe II] emission is affected by individual supernovae, and the Hα emission peaks are only seen in directions of low extinction. From comparison of Brγ and Hα fluxes we derive extinctions of $A_V = 3 - 5$ towards the hot spots.