OBSERVATIONS OF SELECTED INTERACTING IRAS GALAXIES

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ABSTRACT. Four systems selected from a sample of southern interacting IRAS galaxies are discussed. They have been studied with near-infrared photometry, optical imaging and spectroscopy, and coadded IRAS data.

NGC 6926 is a bright spiral galaxy of moderate infrared activity ($L_{FIR}/L_B \approx 2.9$). The FIR emission is extended. The FIR colors indicate a strong disk component, which is heated by the general interstellar radiation field. This is consistent with the high optical surface brightness and heavy extinction. H_α emitting regions are found in a two-armed structure. Star formation in NGC 6926 has presumably been triggered by a M51-type density wave induced by the neighboring elliptical NGC 6929.

AM 1925-724 is a system of two closely interacting spirals which have developed extremely long and narrow Antenna-like tidal tails. It is an ultraluminous infrared galaxy ($L_{FIR} = 1.13 \cdot 10^{12} L_\odot$). JHKLN photometry shows that the southern component completely dominates the infrared emission. The southern nucleus has an unusual, highly reddened Seyfert 2 spectrum with indications for outflow. AM 1925-724 is possibly undergoing the supposed evolution from ultraluminous starburst to AGN.

ESO 286-IG 19 is an almost completely merged system with a strong circumnuclear starburst ($L_{FIR} = 1.12 \cdot 10^{12} L_\odot$). The morphology of the emission line region and the outward decline of the H_α/[N II] line ratio indicate a strong galactic wind.

NGC 3597 is an advanced merger with an already quite elliptical-like morphology. Despite the relaxed appearance, there is still strong star formation in the circumnuclear region. Star formation from gas dissipated into the central regions can enhance the central phase space density of the stars, invalidating an argument against evolution from mergers to ellipticals.

NGC 3597 has a system of bright and isolated blue star clusters. Comparison with models for the evolutionary fading and reddening of a cluster shows that they will become similar to bright globular clusters of our galaxy after several Gyr. Unfortunately, the spatial resolution from the ground is insufficient to decide whether these objects are really compact, globular-like objects or loose associations of about 100pc size, which would be dissolved by external disturbances. If these objects are really young globulars, the specific globular cluster frequency could rise during merging from the low value for spirals to the high value for ellipticals.

F. Combes and F. Casoli (eds.), Dynamics of Galaxies and Their Molecular Cloud Distributions, 312.