

of their fluxes arises from a young age population ($< 5 \times 10^8$ years). We suggest that a transfer of gas appears to be the most likely way for the E components to acquire fuel for star formation activity. The only other alternative would be to invoke an unusual star formation history in ellipticals that inhabit mixed pairs.

AN EQUATORIAL CATALOGUE OF FAINT INTERACTING GALAXIES

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We have been working on a large survey of faint galaxies in order to examine the rise in the merger rate with redshift and study some statistical relations between close galaxies and the field galaxy population. The observations were taken at CTIO 4-m prime focus with a redshifted filter B/($z = 0.4$) by the High-Z Supernovae Search Group. The image set comprises 46 equatorial fields of $15' \times 15'$ ($0.44''\text{pixel}^{-1}$) with a total area of 2.61 deg^2 with 5 minutes exposure time. The photometry was performed by an algorithm which measures the “total” light within a variable aperture (Kron 1980; Infante 1987) which is better for extended objects than fixed circular apertures. Objects were then classified as galaxies, stars or noise by using the properties of the inverse first and second moments of the images which gives a measure of intrinsic size and central compactness, respectively. 73 988 galaxies were found. The completeness of our catalogue is given by the turn over the galaxy number counts as a function of the magnitude providing a rough estimate of completeness as well. It is well known that galaxy number counts in R rise as $d\log N/dm \approx 0.3$ up to $R < 25$. As the turn over in the number counts occurs at $m_R > 22.5$ we, therefore, claim that our catalog of pairs and groups is 99% complete at $m_R < 22$. We have found 1752 isolated pairs and 31 groups of galaxies within $19 < m_R < 22$ and $2'' < \theta < 6''$. Our results show clearly an increase in pairs and groups of galaxies in comparison to a randomly generated catalogue. A following step will be to measure redshifts for a statistically significant number of galaxies which will require a large amount of observing time at 4-m class telescopes. However, our sample is equatorial and accessible from both hemispheres.

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EXCITATION AND KINEMATICS OF CIRCUMNUCLEAR GAS IN ACTIVE GALAXIES

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Based on long-slit spectroscopic observations obtained at the Cerro Tololo Inter-American Observatory 4-m telescope, through a $2''$ -slit, with medium dispersion (1.7\AA resolution FWHM) spectroscopy in the $\lambda\lambda 6200\text{--}7000 \text{ \AA}$, we study the kinematics and excitation of gas in circumnuclear regions of the active galaxies NGC 3081 and NGC 7213. We fit a circular model $V(r) = Vo + Ar/(r^2 + Co^2)^{p/2}$ (Bertola et al. 1991) to the observed velocity field by means of a non-linear least-squares algorithm, and compare the parameters, obtained through the fit of the model, with those of normal galaxies. These derived parameters are

	NGC 3081	NGC 7213
Vo (km s^{-1})	-13.2	7.0
A (km s^{-1})	-160.2	223.2
Co (kpc)	2.61	0.87
p	0.93	1.0 (fixed)

We investigate the deviation of the observed velocity field with respect to the propose model. The excitation is studied based on the emission line ratios $[\text{N II}]\lambda\lambda 6548,84/\text{H}\alpha$ and $[\text{S II}]\lambda\lambda 6717,31/\text{H}\alpha$. Besides emission of the nucleus and H II regions, we verified also a diffuse emission, apparently from the galaxies' disc. We investigate the origin of the ionization and excitation, finding a correlation between the FWHM of the $[\text{N II}]\lambda 6584 \text{ \AA}$ emission line and the emission line ratios $[\text{N II}]\lambda\lambda 6548,84/\text{H}\alpha$, which suggests that shocks are the ionizing source of the gas.

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