

signatures, such as the nebular emission of atomic species like [NeII] and [NeIII], and the H₂ temperatures we also relate the global pattern of star formation in Starburst galaxies with the internal physics of the ISM.

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DISK MASS-TO-LIGHT RATIO THROUGH STELLAR POPULATION SYNTHESIS: DARK MATTER CONTENT OF NGC 5278

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We extended the study on the mass distribution of the spiral galaxy NGC 5278, obtaining the 2D mass distribution of the stellar disk of NGC 5278 using broad band photometric observations and stellar population synthesis models. We performed the rotation curve (RC) decomposition of NGC 5278, subtracting the extracted baryonic disk from the observed RC and fitting only the dark matter RC with four density profiles of dark matter (DM) halos: Hernquist (HH), Burkert (BH), Navarro, Frenk and White (NFW) and Einasto (EH). The main results of this work were that the HH DM halo better fitted the DM RC of NGC 5278 in the case of disk mass $M_d = 5.6 \times 10^{10} M_\odot$ and less 30% of this value, and also that the cored ($n < 4$) EH DM halo better fitted the DM RC of NGC 5278 in the case of more 30% disk mass.

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DETERMINATION OF HALO OCCUPATION DISTRIBUTION

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In this work, we propose a new method to calculate the Halo Occupation Distribution (HOD). It consist of subtract galaxies that are in front or behind the group (background galaxies), but, for projection effects, seem to belong to this. This allows to combine spectroscopic information from catalogs of galaxy groups with photometric information from catalogs of galaxies, the main advantage of this is the possibility to estimate the HOD in more ranges of absolute magnitudes. To evaluate the procedure, we used mock catalogs of galaxies and groups constructed with an imposed HOD. We compare this fiducial HOD with the obtained results by applying our method. Finally, we implement background subtraction in the Sloan Digital Sky Survey DR7, compare to the results of Yang et al. (2008) and calculate the HOD in other ranges of absolute magnitudes.

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THE DENSE GAS IN M82

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Galactic winds are responsible of carrying energy and matter from the inner regions of galaxies to the outer regions, even reaching the intergalactic medium. This process removes gas from the inner regions, the available material to form stars. How and in which amount these winds remove gas from galaxies plays an important role in galaxy evolution. To study this effect we have obtained 3 mm maps of dense gas ($n_{\text{crit}} > 10^4 \text{ cm}^{-3}$) in the central region of the starburst galaxy M82. We detect line emission from the dense molecular gas tracers HCN, HCO⁺, HNC, CS, HC₃N and C₆H. Our maps reveal a considerable amount of HCO⁺ emission extending above and below the central star-forming disk, indicating that the dense gas is entangled in the outflow. The mass of molecular Hydrogen outside the central starburst is $M_{\text{out}} \approx 3 \pm 1 \times 10^6 M_\odot$, while in the central starburst is $M_{\text{disk}} \approx 8 \pm 2 \times 10^6 M_\odot$. These maps also show variations of the amount of dense gas over the starburst disk, revealing that the gas is more concentrated towards the center of the starburst and less towards the edges. It is the average amount of dense gas what drives the observed star formation law between dense gas and star formation rate on galactic scales.