LARGE SCALE DISSOCIATION OF MOLECULAR GAS AND STAR FORMATION IN M83

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Observations of the distribution of the CO-molecule in several prominent late-type galaxies indicate that the central H I depressions may very well be filled in with molecular gas. One such galaxy is M83 (NGC 5236) and, although the angular resolution of the CO-observations is insufficient to discern details on the scale of a spiral arm, it is known that CO is concentrated in the central regions within a radius of 1'. Furthermore, at a resolution of 50", the CO profile at the position of the nucleus is as bright in M83 as it is for example in NGC 6946, IC 346 and M51.

From recent H I observations with the VLA at a resolution of 10", and Hβ observations with TAURUS on the AAT at a resolution of $\sim$ 1.5", we can study the detailed relationship between dust lanes, H II complexes, and H I clouds. In one particular region of M83, no H I is found at the position of the dust lane. We suggest that the gas is molecular here, changing to the atomic state further downstream from the shock as a consequence of star formation.

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CO OBSERVATIONS OF THE CENTRAL BAR OF M83

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ABSTRACT. CO observations of the nuclear region of the SABc galaxy M83 have been made with the 45-m telescope at NRO. A bar-like elongation of the CO emission along the optical bar and a velocity field which suggests noncircular motions are found. These results are consistent with predictions based on the theoretical model of barred spiral galaxies. The inflow and concentration of molecular gas in the nucleus of M83 may sup-