STAR-BURSTS IN S0 GALAXIES: BARS, RINGS, AND TIDAL DISTURBANCES

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ABSTRACT. The nature and causes of central star-bursts in S0 galaxies are discussed.

DISCUSSION

A significant fraction of S0/SB0 galaxies have high star formation rates within the central few kiloparsecs. This is verified by optical spectra, radio power and morphology, the radio-to-infrared flux ratio, and far infrared color (Dressel 1988, Dressel et al. 1990). These galaxies have warmer far infrared sources than galaxies with disk-dominated emission: the 100μ-to-60μ flux ratio is generally less than 2.0. The strongest infrared sources in these galaxies are as powerful as the strongest sources in Sc galaxies: $P(60\mu)=10^{25}$ WHz^{-1} for H_o=50 km $s^{-1}Mpc^{-1}$.

In a magnitude-limited, 60μ-flux-limited sample (14.5 mag and 1.5 Jy, respectively), the SB0 galaxies have a higher 60μ detection rate (16%) than the S0 galaxies (3%) (Dressel 1988). Bars may thus be a cause of central star formation, or may be the result of the same circumstances that induce the star formation (e.g., interaction with a companion). Some of the most infrared-powerful S0/SB0 galaxies are conspicuously interacting with a large nearby companion.

Allowing for diffusion of the radio-emitting electrons, the radio morphologies of these galaxies should indicate the morphologies of the star-forming regions. A variety of radio morphologies has been observed at the VLA, ranging in type from a centrally peaked source to a ring.

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