

INFRARED IMAGING OF M82: A STARBURST IN AN EDGE-ON BARRED GALAXY

C.M. Telesco (NASA MSFC), H. Campins (U. Florida), M. Joy, K. Dietz,
and R. Decher (NASA MSFC)

We present images of M82 in six passbands spanning the 1-30 μm spectral region. JHK images obtained with the KPNO InSb array show that the center of M82 contains a bar about 1 kpc long. Analysis of the near-IR colors indicates that this bar morphology does not result from interstellar extinction (Fig. 1), but is intrinsic to the red stellar population. The bar probably resulted from the interaction of M82 with M81, and provides a hitherto unrecognized link between the interaction and the starburst. The 10-30 μm images, obtained at the IRTF with the MSFC 20-pixel bolometer array, show color variations with position that imply that the emission originates in a population of heated dust grains extending to very small sizes. The striking spatial variations of these colors also provide evidence for spatially dependent depletion of the small grains which can result in significant spatial variations in the elemental abundances and hence the molecular content. A paper describing these results has been accepted for publication in the *Astrophysical Journal*.

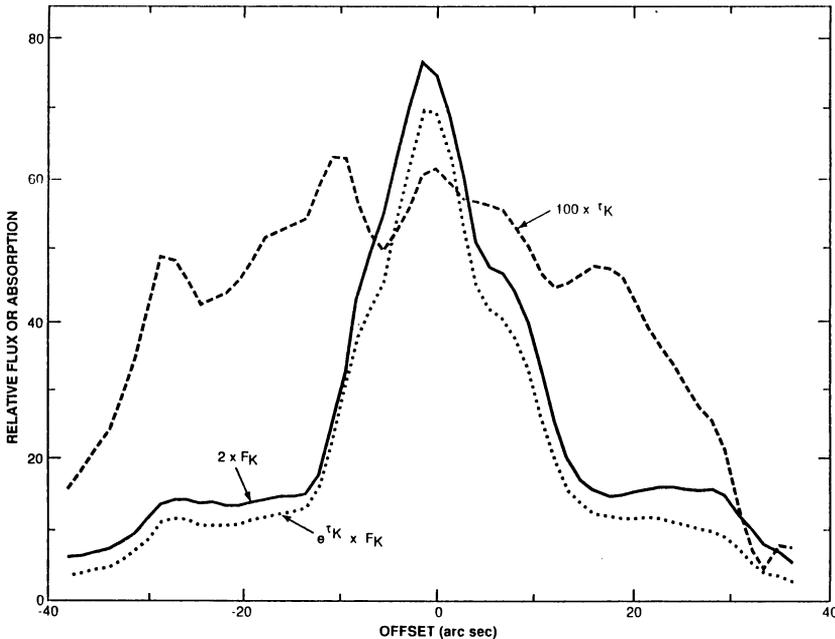


Fig. 1. Arbitrarily normalized scans along the major axis constructed from our K image. The fluxes before (F_K) and after correction for the extinction (optical depth τ_K) are shown. The broad plateau extending to $\pm 30''$ (± 500 pc) from the nucleus is the bar. These data demonstrate that the bar morphology is intrinsic to the red stellar distribution.