

THE CENTRAL REGION OF NGC 1365. SEST AND VLA OBSERVATIONS OF CO AND THE RADIO CONTINUUM

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Abstract. The barred spiral Seyfert galaxy NGC 1365 has been observed in the radio continuum at wavelengths of 2, 6 and 20 cm, using scaled arrays of the VLA, and complete maps have been made in the $J = 1 - 0$ and $J = 2 - 1$ CO emission lines using the SEST. MEM maps of the 6 and 20 cm emission, as well as a spectral index map, have been produced with a resolution of $2''.3 \times 0''.9$, and the 2-cm map has a resolution of $0''.25 \times 0''.10$. The dominant continuum features are a number of unresolved sources with relatively flat non-thermal spectral indices (-0.3 to -0.5), immersed in an incomplete circumnuclear ring, which is superimposed upon a background that extends into the bar along the prominent dust lanes. The ring has angular dimensions of $8'' \times 20''$, which corresponds to a linear dimension of the order of 1 kpc. There is clear evidence of a jet, about $5''$ long, originating at the position of the Seyfert nucleus and extending in a southeastern direction, closely along the minor axis of the galaxy. The jet has a steep non-thermal spectral index (-1.0) and is aligned along the axis of a conical shell of [OIII] emission. The CO molecular gas peaks at the nucleus and is strongly concentrated to the nucleus and bar regions with a certain enhancement along the bar. The total molecular hydrogen gas mass in the observed region is $2 \times 10^{10} M_{\odot}$, with $6 \times 10^9 M_{\odot}$ lying within 2.2 kpc of the nucleus. A full presentation of the results will be published in *Astronomy and Astrophysics* in 1994.

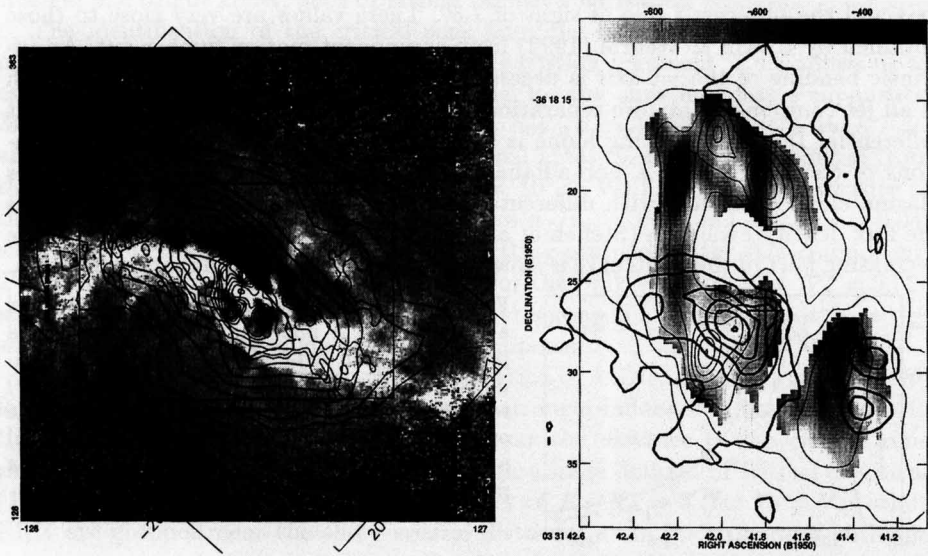


Fig. 1. NGC 1365. Bar Region (left): $J = 2 - 1$ CO T_A^* —thick lines; 20 cm continuum—thin lines; $B - Gunnz$ colour index—grays. Central Region (right): [OIII]—thick lines; 20 cm continuum—thin lines; spectral index—grays; nucleus—cross.