# 43 GHz VLBI Mapping of SiO Maser Emission Associated with Orion-KL IRC-2

Lincoln J. Greenhill
James M. Moran
Harvard-Smithsonian Center for Astrophysics

We present a new milliarcsecond resolution spot map of the SiO maser emission associated with IRC-2 in Orion-KL. The two dominant groups of spectral features, near $V_{LSR}$ = -6 and 16 km/s, were observed in the 43 GHz, v=1, J=1→0 transition of SiO, using a Mark III VLBI system. The 74 km baseline ran from Haystack Observatory in Westford, Massachusetts to Five College Radio Astronomy Observatory (FCRAO) in New Salem, Massachusetts.

We observed five distinct maser features: -8.5 to -6.5 km/s; -5 to -1.5 km/s; 12 to 13.5 km/s; 16.5 to 19 km/s; and 20 to 21 km/s (stellar velocity $\approx$ 5 km/s). The relative positions were established, from an analysis of fringe phases, to an accuracy of about 5 milliarcseconds. All the features lay within an area of radius 0.08 arcseconds or $6 \times 10^{14}$ cm, at a distance of 500 pc. Previous interferometric studies were only able to measure the gross separation between the red and the blue shifted groups (Lane 1982; Wright and Plambeck 1983). Our measurement of the separation between these two groups is consistent with those of the previous studies, indicating the persistence of these two centers of activity. The absolute positions of the masers with respect to IRC-2 are only known to an accuracy of about 1 arcsecond. We assume that IRC-2 is centered between the red shifted and the blue shifted maser features. The relative placement of these two groups of maser features agrees with observations of thermal emission from SO, which traces the outflow on a much larger scale (Plambeck *et al.* 1982). The SiO masers trace the neutral outflow from IRC-2 on the smallest scale yet observed.

## References

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