PROPER MOTION OF SiO "KNOTS" IN THE L1448 MOLECULAR OUTFLOW

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We present the results of the first epoch of Berkeley-Illinois-Maryland Association (BIMA) millimeter array observations of the silicon monoxide "knots" in the L1448 molecular outflow. This is a highly collimated outflow powered by a Class 0 protostellar source in the nearby (350 pc) Perseus molecular cloud complex and star forming region. Not only are the SiO knots moving quite fast (estimated 190 km s^{-1} sky plane velocities), but SiO is extremely enhanced in the knots — by a factor $\geq 10^5$ relative to the ambient cloud — where the ground vibrational state $J = 2 \rightarrow 1$ (thermal) emission is, in fact, brighter than CO $J = 1 \rightarrow 0$ and $J = 2 \rightarrow 1$. We compare the $v = 0$, $J = 2 \rightarrow 1$ SiO emission observed with the BIMA array to previous observations made eight years earlier with the IRAM Plateau de Bure interferometer, and find evidence for systematic proper motions of the SiO emitting knots in the outflow. Our observations also constitute a first epoch of BIMA array data for more sophisitcated image comparison techniques in the next few years. This will provide an important independent check on models of this source, and, by extension, molecular outflows in general.
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