BIMA Array CS J=2→1 Observations of Sagittarius B2

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Observations of the $J = 2 \rightarrow 1$ transition of CS toward the Sgr B2 star-forming region have been carried out using the BIMA (Berkeley-Illinois-Maryland Association) array. The angular and spectral resolutions are $9'' \times 14''$ $(\alpha \times \delta)$ and 1.2 km s^{-1}, respectively. Results indicate that a high velocity (FWZI$\sim$60 km s^{-1}) molecular outflow is present in Sgr B2(M), a core which contains more than 20 compact and ultracompact H II regions. The mass of the outflow, derived assuming a normal CS fractional abundance of 2×10^{-9}, is 8000 $M_{\odot}$. Because this derived mass is much higher than that derived from previous observations, it is likely that the fractional abundance of CS in the Sgr B2(M) outflow is significantly higher than the usual value. No CS emission is observed toward Sgr B2(N), a core/outflow source $\sim50''$ north of Sgr B2(M). The absence of CS emission toward this core is due at least in part to self-absorption from the extensive molecular envelope. It is also possible that CS is underabundant toward the Sgr B2(N) core. CS absorption is observed toward both the Sgr B2(M) and (N) continuum sources. Much of the absorbing material is probably located in the extensive envelope of the Sgr B2 molecular cloud and other clouds not associated with Sgr B2 that lie along the same line-of-sight.

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