TURBULENCE AND HEATING OF MOLECULAR CLOUDS IN THE GALACTIC CENTER

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Molecular gas temperatures in the Galactic Center have been shown to much higher than the gas temperatures of molecular clouds in the disk. These Galactic Center clouds also show large line widths characteristic of turbulence. However, the origin of this heating and turbulence is not well known. In order to investigate this question we analyzed two Galctic Center molecular clouds that showed these characteristic: the G0.10-0.08 cloud and the M0.25+0.01 cloud. We observed these clouds using the VLA at K (25 GHz) and Ka (36 GHz) bands, both of which contain multiple molecular transitions including NH_3, CH_3OH and HC_3N. Using multiple transitions of NH_3, we determined that the rotational gas temperature in the clouds was $\sim$90-100 K. We also discovered multiple 36 GHz CH_3OH class I masers in both the G0.10-0.08 and M0.25+0.01 clouds, $\sim$50 and $\sim$80 respectively. Since these masers trace shocked gas, this indicates that some of this heating and turbulence is caused by these strong shocks. We also present images of the HC_3N line which is a high density tracer and shows dense cores at the center of both clouds.