

INTERACTION BETWEEN MAGNETIC FIELDS AND MOLECULAR CLOUDS ON THE RADIO ARC

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We have made observations of the Galactic center region in the CS J=1-0 and J=2-1 lines with the 45-m telescope at Nobeyama Radio Observatory in order to depict the fine structure and the activity of this region. We propose that several expanding molecular structures in this region are originated by successive supernova explosions at least of 10^{2-3} times within 10^6 years. These may be responsible for strong magnetic fields in the Galactic center region. The interaction between one of the expanding molecular structures and the "vertical" filaments is found. From the

appearance of the interaction, the magnetic field in the "vertical" filaments is estimated to be about 3-5 mGauss.

A molecular filament crosses the "vertical" filaments at the compact polarized source at 10 GHz. Molecular components, flowed from the crossing points, may sweep ionized matter off the gap between the vertical filaments and make the compact polarized source (see Fig. 1).

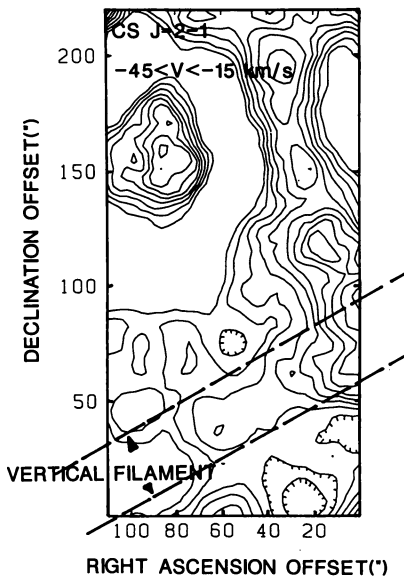


Figure 1. Integrated molecular emission of CS J=2-1 from -45 to -15 km/s at the compact polarized source at 10 GHz (Tsuboi et al., 1985, 1986; Seiradakis et al., 1985). The origin of coordinates is $\alpha = 17^{\text{h}}43^{\text{m}}16^{\text{s}}$, $\delta = -28^{\circ}51'15''$. The contour interval is $\int T_{\text{a}} dv = 0.3 \text{ K} \cdot \text{km/s}$. Two dotted lines show the positions of the "vertical" filaments.

References

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Tsuboi, M. et al. (1985) *Publ. Astron. Soc. Japan* **37**, 359.
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