Q25b Magnetic Field Strength in the Sagittarius A Molecular Cloud Complex

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The Galactic center region is the nearest galactic center of normal barred spiral galaxy. The proximity makes possible to observe peculiar phenomena of galactic centers using existing telescopes. One of them is the enigmatic magnetic field in the region. The large scale magnetic field in the inter-cloud region is poloidal and extending up to ± 150 pc perpendicular to the Galactic plane, which was found as Non-thermal Filaments and Polarized Plumes by radio observations. On the other hand, the structure of the magnetic field in giant molecular clouds of the region, is explored mainly by polarimetry in sub-millimeter wavelength. The large scale structure seems to be toroidal, which suggests that the magnetic field is stretched by a strong shear motion in the molecular clouds. Although the strength of the magnetic field is measured using a spectroscopic method based on Zeeman effect of molecules in the disk molecular clouds, it is difficult to determine the strength in the Sagittarius A molecular cloud complex by this method because the line velocity width of the emission line is ten times wider than that of the disk molecular clouds. We derived the magnetic field strength in the cloud complex, based on the Chandrasekhar-Fermi method using archive data of sub-millimeter polarization and our previous molecular line observation. The magnetic field strength is as strong as 2 - 12 mGauss. We also found a tendency that the magnetic field strength increases with approaching to Sagittarius A*.