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Effects on polarization properties of radio galaxies by magnetized AGN jets

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Radio galaxies are a subtype of active galactic nuclei (AGN) generated by supermassive black hole jets. Polarization measurements of the radio lobes could potentially probe the magnetic field geometry and initial magnetization of the jets. Previous polarization observations have found magnetic field aligned with the jet axis; however, the connection between the magnetization of the jets and the observed polarized emission remains poorly understood. In this research, we use 3D magnetohydrodynamic code GAMER-2 to simulate magnetized AGN jets with a toroidal field geometry within an isolated cluster. We perform simulations with different jet magnetization, and study their difference in the evolution of field geometry within the lobes, and polarization and rotation measure maps.

Section

Galaxy/Extragalactic

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