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Blob formation and ejection above accretion flow around massive black hole

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We study the small scale magnetic reconnection above the radiative inefficient accretion flow around massive black hole via 2D magnetohydrodynamics (MHD) numerical simulation, in order to model the blob formation and ejection from the accretion flow around Sgr A*. The connection of both the newly emerging magnetic field and the pre-existing magnetic field is investigated to check whether blobs could be driven in the environment of black hole accretion disc. It is found that after the magnetic connection, both the velocity and temperature of the plasma can be comparable to the inferred physical properties at the base of the observed blob ejection. At the beginning of the reconnections, the fluid is pulled toward the central black hole due to the gravitational attraction and the current sheet produced by the reconnection is also pulled toward the same direction, consequently, the resulting outflows move both upwards and towards the symmetry axis of the central black hole. Eventually, huge blobs appear, which supports the catastrophe model of episodic jets (Yuan et al. 2009).

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