

Kinetic Simulations of Flaring Activity in a Black Hole Magnetosphere

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Recent observations have identified Sgr A* as a flaring source of nonthermal radiation, likely linked to particle acceleration near the black hole. However, the underlying physical mechanism remains uncertain. While general relativistic magnetohydrodynamic simulations suggest magnetic flux eruptions as a possible driver, they lack self-consistent modeling of particle acceleration. In this work, we present the first 3D global kinetic simulations of analogous magnetic flux eruptions, probing their origin and the resulting particle acceleration processes. We further examine how the jet power depends on the magnetic field inclination relative to the black hole spin and we discuss the implications for Sgr A*.