

The flaring potential of plasmoid formation around black holes

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The flaring events observed in the Sagittarius A* supermassive black hole system can be attributed to the non-homogeneous nature of the near-horizon accretion flow. Bright regions in this flow may be associated with density or temperature anisotropies, corresponding to so-called “bright spots” or “hot spots.” Such orbiting features may explain observations at infrared wavelengths, as well as recent findings at millimeter wavelengths. A physical mechanism that could explain the formation of these hot spots is the creation of magnetic islands (or plasmoids) after a magnetic reconnection event. We present a novel method for detecting these plasmoids in a suite of two-dimensional general-relativistic magnetohydrodynamical simulations. This enables us to better understand the plasmoids’ plasma composition and flaring potential.

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