

Sgr A Lobes as a Tidal Disruption Event from the Galactic Center

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I will present our new work on modeling the 15-parsec-sized Sgr A lobes observed at the Galactic center as the relic of a tidal disruption event occurring about 3500 years ago by the supermassive black hole Sgr A* in our Galaxy. While an increasing number of extragalactic TDEs have been identified in recent years, TDE flares have never been detected from the Galactic center. A TDE flare typically lasts for months or years, but the predicted TDE outflow evolves much longer. Here we perform hydrodynamic simulations to investigate the evolution of TDE outflows in the GC environment, finding that opposing TDE outflows naturally produce bipolar hot lobes with sharp shock-enclosed edges. We show that a pair of TDE jets naturally reproduce the morphology, density, temperature, and X-ray surface brightness distribution of Sgr A lobes observed in X-rays at the GC. The lobe age is derived to be about 3500 yr, consistent with the theoretically-estimated TDE occurrence rate.

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