

## Physical processes around a black hole driven by magnetic reconnection

*Friday, 18 October 2024 09:05 (25 minutes)*

In this talk, I will introduce our two recent works. One is the formation and radiation of jet, another is the flares of black holes. The common key physical processes behind them is magnetic reconnection. In the first work, taking the M87 jet as an example, we show that the well-known BZ model of jet formation, which is a purely dynamical model, can explain various observations of jet, especially the morphology of the jet such as the elongated structure, the limb-brightening feature, and the jet width as a function of distance, if we assume that the nonthermal electrons in the jet are accelerated by magnetic reconnection. In the second work, we try to explain the flares of Sgr A\* observed by GRAVITY. We find from GRMHD numerical simulation of accretion flow that flux ropes can be formed above the accretion flow due to magnetic reconnection and the formed flux ropes will be further ejected. Electrons will be accelerated by the reconnection and produce flares. The predicted light curve of the flare and the trajectory of the hot spot are found to be well consistent with those observed by GRAVITY.

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