

Abstract Submitted
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Modeling production of e^\pm -pair plasma in AGNs¹ ALEX FORD, MIKHAIL V. MEDVEDEV, University of Kansas — Processes around spinning supermassive black holes in active galactic nuclei (AGN) are believed to determine how relativistic jets are launched and how the black hole energy is extracted. The key question in these processes is the origin of plasma in black hole magnetospheres. The only reasonable mechanism is believed to be the electron-positron cascade – the multistage process involving seed photons from an accretion disk, which are Compton up-scattered by charges accelerated in a gap region of a force-free magnetosphere with subsequent photon-photon pair production. In order to explore the process of the e^\pm plasma production, we developed a numerical code which models the dynamics of the cascade along magnetic field lines. We demonstrate that plasma production is sensitive to the spectrum of the ambient photon and magnetic fields, the black hole mass and spin, and other parameters. We discuss the results and observational predictions.

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