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Modeling magnetospheres of spinning black holes[1] ALEX FORD, BRETT KEENAN, MIKHAIL MEDVEDEV, University of Kansas — We numerically model the magnetospheres of spinning (Kerr) black holes (BHs) and the production of relativistic jets in active Galactic Nuclei, quasars and micro-quasars, blazars, etc. There is a lore that Kerr BHs in an external magnetic field form *force-free* magnetospheres, whose structure is believed to determine how relativistic jets are launched and how the BH energy is extracted, e.g., via Blandford-Znajek mechanism. The key assumption for the force-free condition is the presence of plasma with the density being above the Goldreigh-Julian density. Unlike NSs which can in principle supply electrons from the surface, plasma around BHs must be generated *in situ* via a pair cascade. Here we we present numerical modeling of the "gap" region, where the cascade can occur. We explore the conditions of the plasma generation, without which AGN, quasar/blazar and other jets cannot exist.

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