Contribution ID: **175** Type: **contributed talk**

Magnetically arrested disks around black hole, and jet formation

Tuesday, 9 July 2019 10:45 (15 minutes)

Synchrotron origin of the radiation from extragalactic disks indicate to important role of the magnetic field in their formation and collimation. Jets from AGN show their close connection with supermassive black holes. Large magnetic fields around BH are formed during an accretion of matter with large-scale magnetic field. Approximate solutions describing such accretion lead to conclusion of formation of an accretion disk around BH supported by magnetic field against gravity, instead of a centrifugal force in the keplerian disk. The efficiency of this regime of accretion may reach 0.5Mc2. The properties of such disk had been studied it the middle of 70s, and much later is was named as "magnetically arrested disk". Different models of jet origin from such disk had been studied in approximate way. 2-and 3 d numerical simulations had been performed during last years, confirming efficiency of jet formation, especially from the disks around rapidly rotating BH.

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Session Classification: Formation and propagation of relativistic outflows

Track Classification: Formation and propagation of relativistic outflows