

## cretion flow around black holes.

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Astrophysical Black holes: A Rapidly Moving Field

## Introduction:

- 1. In the accretion flow around the black hole electron-ion collision time-scale may be larger than that of the dynamical timescale.
- Flow can not maintain a singletemperature, instead, a two-temperature accretion flow is preferred (Eardley+1975).
- 3. Calculation of self-consistent temperature of radiating electrons as well as ions is require for reliable observational conclusions.
- 4. We perform general-relativistic magnetohydrodynamics (GRMHD) simulations to study two-temperature accretion flow.

## **Conclusions:**

- 1. Simple scaling relations for temperature ratio does not work for realistic accretion flow.
- Radiative cooling would be important for mass accretion rate > 10<sup>-7</sup> Eddington units.



 $\beta_{\rm br}(\dot{M}/\dot{M}_{\rm Edd}) = \beta_{\rm br0} + \beta_{\rm br1}(\dot{M}/\dot{M}_{\rm Edd})^{0.16}$ .