Evolution of MHD Torus and magnetically driven mass outflows around spinning AGN

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Model

- We perform axisymmetric, two-dimensional, MHD simulations to investigate accretion flows around spinning AGNs.
- We ignore any radiation transport and loss in our model (RIAF).
- We consider PLUTO code to simulate inflow-outflow around AGN.



Simulation Results

Astrophysical Black holes: A Rapidly Moving Field

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Effect of magnetic field



- We find a positive correlation between mass outflow rates and magnetic field.
- We observe that the mass outflow rates are purely magnetically driven in our model.
- We also observe quasi-periodic nature of luminosity variation for higher magnetic field.

Effect of black hole spin











We do not find any correlation between mass outflow rates and black hole spin.

References

[1] Balbus S. A., Hawley J. F., 1991, ApJ, 376, 214 [2] Mignone A., et al., 2007, ApJS, 170, 228

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