



Contribution ID: 4

Type: **not specified**

Spherical accretion of a Vlasov gas to a Kerr black hole

Thursday, 27 June 2024 14:40 (15 minutes)

Astrophysical compact objects are known to attract matter in their surroundings, in a process known as accretion. This is one of the most important contributions to the formation and evolution of large-scale structures such as galaxies, stars and compact objects. In this work, we investigate relativistic collisionless accretion to rotating black holes. First steps towards the implementation of Kerr spacetime in the OSIRIS-GR code are taken and validated, allowing to perform this research with many-particle simulations. Finally, preliminary results for the Kerr effective potentials are obtained numerically outside the equatorial plane for a Vlasov gas, resorting to single-particle simulations.

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