

# Supermassive black hole spin evolution in cosmological simulations with OpenGadget3

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Central massive black holes (BHs) and their host galaxies are thought to co-evolve also due to the complex interaction that arises when the BHs accrete gas and release a large amount of energy back into the surrounding environment.

Important actors in this scenario are powerful jets, and the spin of the central black hole is thought to be a key physical parameter that determines their power and direction.

To carry out a self-consistent, statistically meaningful study of the role of BH spins and related jet feedback, I implemented a sub-resolution model for cosmological hydrodynamical simulations, that evolves the BH spin due to the occurrence of misaligned gas accretion.

The model provides a more complete physical description of the accretion process from the resolved scales, adding the important spin parameter to the BHs in simulations. I will present the results of simulations that test such a model in a fully cosmological context, which allows to carry out statistical studies on the distribution of spins and radiative efficiencies.

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