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## Simulating AGN jet feedback effects in galaxy clusters

*Wednesday, 17 August 2022 11:00 (25 minutes)*

The intra-cluster medium and its x-ray dark cavities represent some of the most direct evidence of feedback effects from AGN jets on galactic halo scales. Yet, modelling jets in order to understand the detailed process that leads to a reduction of the cooling-flow and a regulation of star formation and black hole accretion poses substantial challenges even with state-of-the-art computational resources. I will present developments towards predictive simulations of jet-ICM interactions, present some recent results on short term ( $< t_c$ ) feedback effects and discuss their implications in the self-regulated heating-cooling cycle of the ICM. Finally, I will propose a new method to model cold gas in global galaxy cluster and even cosmological simulations based on a 2-fluid formulation of hydrodynamics. This new method will open up the possibility to study cold, spatially unresolved clouds in global simulations and their evolution over Gyr timescales, thereby providing an opportunity to include small-scale jet feedback on the interstellar medium, global ICM simulations and cold filaments in the ICM in the same simulation.

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