

Active Galactic Nuclei Feedback : From Cosmological Simulation to Observation

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Observations suggest that feedback from Active Galactic Nuclei (AGN) plays important role in the evolution of large scale structures of the universe. However, the exact physics of coupling the feedback energy to their surrounding medium is still not well understood. In this talk I will try to explain our work to investigate different modes of AGN feedback and their effects on the surrounding gas as well as host galaxies and dark matter halos by analysing diffuse X-ray emission from galaxy groups and clusters. Starting with careful investigation of different scaling relations between super-massive black holes (SMBH) and host halo properties using cosmological simulation, we continue to model X-ray emission from simulated galaxy clusters with the help of Astrophysical Plasma Emission Code (APEC). Finally, we perform synthetic observation of Chandra X-ray telescope of these systems using ray-tracing simulator Model of AXAF Response to X-rays (MARX) to compare them with actual observations. Our results conclusively establish the impact of AGN feedback on their ambient medium. Besides, we show the importance of jet and X-ray mode of AGN feedback together with their detection probability at different redshifts with Chandra and propose to continue the search with upcoming X-ray missions such as Athena and XRISM

Primary author: Dr KAR CHOWDHURY, Rudrani (Postdoctoral Fellow)

Co-authors: Prof. SARAZIN, Craig (University of Virginia); Dr DAI, Jane (The University of Hong Kong); Dr CHATTERJEE, Suchetana (Presidency University)

Presenter: Dr KAR CHOWDHURY, Rudrani (Postdoctoral Fellow)

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