



X-RAY ASTRONOMY 2019

Current Challenges and New Frontiers in the Next Decade

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A multi-observatory X-ray approach to characterize heavily obscured AGN

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According to the different models of Cosmic X-ray Background (CXB), the diffuse X-ray emission observed in the 1 to ~200-300 keV band, is mainly caused by accreting supermassive black holes, the so-called active Galactic Nuclei (AGN). Particularly, at the peak of the CXB (~30 keV) a significant fraction of emission (10-25%) is expected to be produced by a numerous population of heavily obscured, Compton thick (CT-) AGN, having intrinsic column density $N_{\text{H}} \geq 10^{24} \text{ cm}^{-2}$. Nonetheless, in the nearby Universe ($z \leq 0.1$) the observed fraction of CT-AGN with respect to the total population appears to be lower than the one expected on the basis of the majority of CXB model predictions (~20-50%), being between 5 and 10%. This discrepancy between data and models is one of the open challenges for X-ray astronomers, and needs to be solved to get a complete understanding of the AGN population.

In this presentation, I will discuss a multi-observatory X-ray approach to find and characterize heavily obscured AGNs. The starting point of the project is the 100-month Swift-BAT catalog, the result of a ~7 years all-sky survey in the 15-150 keV band and a powerful tool to select and identify nearby, heavily obscured AGNs. These objects are then targeted with snapshot (5-10 ks) observations with Chandra and Swift-XRT, which allow us to constrain the intrinsic absorption value within a 20-30% uncertainty. Finally, deep (25-50 ks) observations with XMM-Newton and NuSTAR allow us to study the physics of these complex and elusive sources.

Topic

Active Galactic Nuclei: accretion physics and evolution across cosmic time

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