X-RAY ASTRONOMY 2019
Current Challenges and New Frontiers in the Next Decade
8-13 September 2019
CNR/INAF Research Area, Bologna, Italy

Contribution ID: **201** Type: **Poster**

Correlation between X-ray emission and stellar populations: the definitive study of nearby galaxies observed with XMM-Newton

Friday 13 September 2019 14:41 (1 minute)

We present the analysis of all galaxies within a radius of 200 Mpc observed with XMM-Newton. These galaxies are the result of cross-correlation between the XMM-Newton archive and the HECATE catalogue, the most complete galaxy catalogue (~165,000 galaxies) of the local universe incorporating robust distances and stellar population parameters. In our analysis we will use data from all objects observed by XMM-Newton, including those with no formal detections (i.e. upper limits). The sample contains 2500 galaxies observed in more than 2100 observations. Using the full set of archival XMM-Newton data we measure their integrated X-ray luminosity and spectral parameters, in order to study the correlation between X-ray luminosity, star-formation rate, and stellar mass. Since the existing X-ray correlations on star-formation rate and stellar mass have been based on a few dozens of galaxies, this much larger sample provides the opportunity to cover the full range of star-formation rate and stellar mass in the local Universe. In addition the large size of the sample enables us to characterize stochastic effects in these scaling relations.

Topic

Compact and diffuse sources in galaxies and in the Galactic Center

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Session Classification: POSTER SESSION