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: **100** Type: **Contributed**

Galaxy groups in the local universe: results from a complete sample

Tuesday, 10 September 2019 15:50 (15 minutes)

Galaxy groups are arguably the most important environment for our understanding of galaxy evolution, AGN feedback and the development of the hot intergalactic medium (IGM). Previous studies of groups in the nearby universe have either used optically-selected samples to examine galaxy populations, or X-ray selected samples (from the Rosat All-Sky Survey) to examine IGM properties. While these approaches have yielded important results, their selection methods mean they are subject to significant biases. We have created the the Complete Local-Volume Groups Survey (CLoGS), an optically-selected statistically-complete sample of 53 groups in the nearby Universe (D<80 Mpc), surveyed in the X-ray (XMM-Newton and/or Chandra), low-frequency radio (GMRT 235 & 610 MHz) and, for the dominant galaxies, molecular gas (IRAM 30m or APEX CO). This combination of data allows us to confirm which groups are fully virialized, examine their dynamical and thermal state, and investigate the role of AGN feedback in these systems. We will present results from the sample, showing that roughly one third of X-ray bright groups in the local universe are dynamically active (merging or sloshing), and roughly one third show evidence of ongoing or recent feedback from central AGN. We will examine the conditions under which feedback occurs in groups, and show examples of powerful outbursts which may dramatically over-heat the IGM. We will also show that a significant fraction (>20%) of the nearby group population has been missed by previous studies, and discuss the implications for future surveys.

Topic

Hot and diffuse baryons

Affiliation

Smithsonian Astrophysical Observatory

Primary author: O'SULLIVAN, Ewan (Smithsonian Astrophysical Observatory)

Co-authors: Dr KOLOKYTHAS, Konstantinos (IUCAA); Dr VRTILEK, Jan (Smithsonian Astrophysical Observatory); Dr DAVID, Laurence (Smithsonian Astrophysical Observatory); Dr GITTI, Myriam (Universita di Bologna); Dr SCHELLENBERGER, Gerrit (Smithsonian Astrophysical Observatory)

Presenter: O'SULLIVAN, Ewan (Smithsonian Astrophysical Observatory)

Session Classification: HOT AND DIFFUSE BARYONS