

Contribution ID: 210

Type: Contributed

## Resolving X-ray Obscuration Biases with Isotropic AGN Selection – First Results from the NuLANDS Legacy Survey

Thursday 12 September 2019 11:40 (15 minutes)

An accurate assessment of the fraction of heavily obscured, "Compton-thick" AGN in the local Universe provides important insights into the composition and structure of AGN X-ray obscuration, as well as its connection with the evolution of supermassive black holes and their surrounding host galaxies. However, current estimates of the Compton-thick fraction vary dramatically between ~20-70%, and it remains unclear whether this large range is driven by selection effects, inadequate sample sizes, luminosity/Eddington rate dependencies or something else entirely. The main handicap of previous works has been the inability to effectively select objects that are representative in terms of sampling N(H) parameter space, i.e. are unbiased even by Comptonthick obscuration. To investigate such issues, we present NuLANDS - a large far-infrared legacy survey with the X-ray satellites NuSTAR, XMM-Newton and Swift (more than 4 Ms in total) aimed at constructing an unbiased census of AGN obscuration in the local Universe. The infrared selection using AGN-like colours guarantees that we are not affected by line-of-sight X-ray obscuration biases, even into the log N(H)/cm-2 > 25 regime. In this talk, I will report on multiple new Compton-thick AGN discovered and classified with NuLANDS, complemented with multi-wavelength diagnostics. First results further indicate a Compton-thick fraction > 30% and that hard X-ray selection alone remains biased against the most heavily obscured AGN. NuLANDS marks a major step in completing the local census of accretion activity, and will provide vital boundary conditions for determining the composition of the Cosmic X-ray Background, as well as insights into the densest regions of the AGN torus.

## Topic

Active Galactic Nuclei: accretion physics and evolution across cosmic time

## Affiliation

University of Southampton

**Authors:** GANDHI, Poshak (University of Southampton); Prof. ALEXANDER, David (Durham University); Dr BALOKOVIĆ, Mislav (Harvard-Smithsonian Center for Astrophysics); Prof. BAUER, Franz (Pontificia Universidad Católica de Chile); Prof. BRANDT, Niel (Penn State University); Dr FARRAH, Duncan (Virginia Tech,); Prof. HAR-RISON, Fiona; Dr HÖNIG, Sebastian (University of Southampton); Dr KOSS, Michael (Eureka Scientific Inc); Prof. RICCI, Claudio (Universidad Diego Portales (UDP)); Dr STERN, Daniel (Jet Propulsion Laboratory); Prof. TREIS-TER, Ezequiel (Universidad de Concepción)

Presenter: BOORMAN, Peter (University of Southampton)

Session Classification: ACTIVE GALACTIC NUCLEI