Astro Seminar Series

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All the X-ray binaries in the Universe:

X-ray Emission from Normal and Starburst Galaxies Near and Far

Excitement has mounted recently over the role of X-ray emission from galaxies in early heating of the Intergalactic Medium (IGM), demonstrating that understanding of X-ray emission from normal and starburst galaxies may have significant impact on structure formation in the Universe. Here we present our research on constraining the X-ray SED of galaxies across cosmic time via several complementary approaches.

In the very local universe (d <~ 30 Mpc including the Local Group) we are using NuSTAR to understand the accretion states and total output of black hole and neutron star binaries using the important lever arm of 0.5-30 keV emission. At intermediate distances (10-100 Mpc), we are comparing the X-ray output of galaxies with star formation histories and population synthesis model predictions using both Chandra and XMM data.

In the slightly more distant universe (z~0.1-0.2) we can find rare analogs to primordial starbursts via wide-field optical/UV surveys that may be studied with Chandra.

We will finish with a discussion of starburst galaxies emitting X-rays at z>4, which thanks to the extremely deep Chandra Deep Field-South 7 Ms survey, are better constrained than ever before. I will discuss survey strategy and how the various pieces of the puzzle fit together regarding the X-ray output of galaxies and their X-ray binary populations over cosmic time.

Time permitting, I will finish with some discussion of next-generation facilities.

Tuesday March 29, 3:30pm

Bell Room (103)
Rutherford Physics Building