Observing Evolution in Star-Forming Galaxies in X-rays

The Chandra Deep Fields (CDFs) have reached flux limits where normal/starburst galaxies are significant contributors to the X-ray number counts (~ 40% at $F_{0.5-2.0}$ = 1 x 10^-17). Based on these results and current theoretical models of X-ray binary evolution we will discuss expectations for observing galaxy evolution in X-rays in IXO deep surveys.   With the high sensitivity of IXO (particularly ~ 5" resolution constant across the WFI FOV and high effective area) IXO surveys should detect large numbers of galaxies which will allow evolution to be studied in multiple redshift bins. High spatial resolution will also drive the need to minimize source confusion below $F_{0.5-2.0 keV}$ = 10^{-17} ergs/s/cm^2. In addition to detecting starburst galaxies individually, stacking will be used to constrain their properties on average, particularly Lyman-break galaxies at z>2. We will also discuss challenges in segregating galaxies from obscured AGN in IXO deep fields and expectations from proposed survey X-ray missions.