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Extragalactic Fast X-ray Transient Candidates Discovered by Chandra

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Fast X-ray Transients (FXRTs) are as-yet unexplained phenomena. They are energetic X-ray flares that last a few tens to a few thousand seconds. Over the past few years, ~ 30 extragalactic FXRTs have been discovered in Chandra, XMM-Newton, Swift/XRT and eROSITA data. Numerous proposed explanations include a tidal disruption (TDE) of a white dwarf (WD) by an intermediate-mass black hole (IMBH), a supernova shock breakout (SBO), and a binary neutron star merger (BNS). So far, FXRTs lack multiwavelength counterparts, and hence we rely on their host properties to understand their nature. In this talk, I will present a new population of FXRTs serendipitously discovered from Chandra archival data (observation from the Chandra Data Release 2). This new sample of 14 FXRTs might have a mix of origins. We identify a sub-sample of FXRTs that show similar timing and spectral properties to CDF-S XT2 (a FXRT previously identified in the Chandra Deep Field South), and volumetric rate density, which suggest an association with BNSs. The improve in the detection of FXRTs by the current and future X-ray missions will open new opportunities to study and understand exotic astrophysics phenomena associated with FXRTs.

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