

Magnetars, X-ray Pulsars, and Related Objects

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ABSTRACT

Recent X-ray observations, including in particular those with Suzaku covering a wide energy band, have much reinforced the high-magnetic-field interpretation of magnetars. These include the discovery of clear evolution of their wide-band spectra (Enoto et al. 2010), and detection of a hard-tail component from their weaker short bursts (Nakagawa et al., in prep.). Nevertheless, the origin of magnetars remains a big mystery. To address the issue, we extend our Key Project for Suzaku AO4, and attempt to conduct comprehensive studies from the following four approaches. (1) To measure magnetic fields of MAXI-detected transient X-ray pulsars (e.g., GX 304-1 by Mihara in this WS), and investigate their magnetic field distribution in the $>5 \times 10^{12}$ G range. (2) To study SuperGiant Fast X-ray Transients (SFXTs), under a hypothesis that they are somewhat aged binary magnetars. We have already obtained new results by analyzing archival Suzaku data. (3) To search SNRs and other environments for new magnetar candidates (e.g., CXOU J171405.7 by Sato et al. 2010). (4) To investigate SNRs associated with magnetars, trying to find their distinct characteristics that can be associated with the birth of magnetars.