**Introduction**

The study of AXPs and SGRs is important for understanding the characteristics and behavior of these neutron stars. AXPs (Anomalous X-ray Pulsars) and SGRs (Soft Gamma Repeaters) are both neutron stars with unique properties, but their rapid spin down and the detection of broad-band noise are key features that make them interesting for study.

In recent years, the magnetar model has been proposed to explain the properties of these objects. The magnetar model is based on the idea that magnetars have strong magnetic fields (B ~ 10^14 G) that can heat the surrounding material and produce the observed broad-band noise.

The observed broad-band noise in AXPs and SGRs is thought to be caused by the presence of a hot spot on the magnetic axis of the neutron star. The hot spot is thought to be replenished with new particles, and the broad-band noise is produced by the emission of X-rays from these particles.

We focus on the observation and analysis of the broad-band noise in AXPs and SGRs, with a particular emphasis on the magnetar model. We analyze the broad-band noise in various AXPs and SGRs using the Rossi X-Ray Timing Explorer (RXTE) and other instruments.

**Results and Observations**

- **AXS 1647+502**
  - The averaged PDS in time showing the broad-band noise of AXS 1647+502 for the time span MJD 51689.2–51716.4.
  - The integrated rms values for the RXTE observations are given in Table 1.
  - The source has shown no broad-band noise other wise following its outburst.

- **4U 0142+61**
  - The averaged PDS in time showing the broad-band noise of 4U 0142+61 for the time span MJD 53668.5–53915.2.
  - The integrated rms values for the RXTE observations are given in Table 1.
  - A similar rise in the broad-band noise of 1E 1048.1-5937 after a long burst for about 1.95 years is revealed. It explains the acceleration of the spin-down rate of this source.

- **1E 2259+586**
  - The averaged PDS in time showing the broad-band noise of 1E 2259+586 for the time span MJD 52182.2–52445.0.
  - The integrated rms values for the RXTE observations are given in Table 1.
  - The source has shown no broad-band noise other wise following its outburst.

**Discussion and Conclusions**

- **AXS 1647+502**
  - The source has shown no burst activity between burst epochs MJD 51689 and 51715. It has shown broad-band noise with long duration of 5.3–5.5 years which may be a result of fluctuation fluctuations and variability due to Compton-up scattering in a magnetar corona.

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**References**