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The first outburst of the young magnetar Swift J1818.0-1607

Wednesday 7 June 2023 18:00 (10 minutes)

Swift J1818.0-1607 is a rapidly rotating magnetar ($P \sim 1.36$ s) that was discovered in March 2020 during an outburst. Follow-up radio observations confirmed its nature and identified it as the sixth radio-loud magnetar known to date. Swift J1818.0-1607 is also one of the most rapidly spinning magnetars and one of the youngest neutron stars in the galaxy. In this talk, I will present the results of X-ray observations of Swift J1818.0-1607 using the XMM-Newton, NuSTAR, and Swift telescopes. These observations allowed us to study its spectral and temporal properties in great detail during the first 7 months of its outburst. Additionally, we conducted a long-term study of the flux and the spectral evolution over the first 19 months of the outburst. This study revealed a decrease in luminosity by a factor of about 90 over 1.5 years since the outburst onset. We also observed Swift J1818.0-1607 with the VLA, which allowed us to detect the radio counterpart of the magnetar and a half-ringlike structure of bright diffuse radio emission. We suggest that this radio structure may be associated with a supernova remnant.

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Session Classification: Student talks