



- RAY ASTRONOMY 2019

Current Challenges and New Frontiers in the Next Decade

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New outburst with periodic modulation for a luminous supersoft source in NGC 300.

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Supersoft X-ray sources are characterized by black body temperatures below 100 eV and are found with luminosities that are explained by steady nuclear burning of hydrogen accreted onto white dwarf surfaces (in the range of $10^{36} - 2 \times 10^{38}$ erg/s) or are ultraluminous ($> 2 \times 10^{38}$ erg/s) requiring the presence of a neutron star or black hole. We report the discovery of a new outburst for the luminous supersoft source, SSS₁, in NGC 300, thanks to a very long XMM-Newton observation performed on the 17-20 December 2016. A modulation with a period of 4.68 ± 0.26 h is detected which is still compatible with a period measured in 2000 ($5.7 \text{ h} \pm 1.1 \text{ h}$), affected by large uncertainties. Depending on the spectral model the bolometric luminosity is superior or equal to 3×10^{38} erg/s and is marginally consistent with a $1.4 M_{\odot}$ white dwarf accreting at Eddington luminosities. The system was found in outburst in 2016, 2008, 2000 and 1992, suggesting a possible recurrence period of about 8 years.

Topic

Compact and diffuse sources in galaxies and in the Galactic Center

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