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Superorbital variability of the X-ray flux in the Be-donor binaries SXP 138, GX-304, and γ Cas

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Abstract

© 2015, Pleiades Publishing, Ltd. RXTE observations of the X-ray binary systems SXP 138, GX-304, and γ Cas in 1997–2011 have shown for the first time that these objects (X-ray binaries with Be donors) display X-ray flux variations on timescales of ~ 1000 days. This timescale is about 10 times longer than their orbital periods, and is comparable to the total time of the observations. The observed variations are apparently not strictly periodic and represent stochastic variability, as is characteristic of such systems in the optical. γ Cas is considered as an example. The series of optical observations of this system available in the AAVSO database covers 78 years, and is much longer than the timescale of the variability studied. Our analysis of this series has shown that γ Cas variability on a timescale of tens of years is predominantly stochastic with a power-law spectrum.

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