

ASTROPHYSICS SEMINAR

Tuesday, 17 January 2012 at 13:30

Accretion of clumpy stellar winds

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Abstract. Neutron stars in high mass X-ray binaries accrete material from their early type optical companions. The material is highly structured, partly due to the interaction of the neutron star with the medium and partly due to the intrinsically clumpy winds of early type stars. The influence of these structures is shown exemplary on two sources. In Vela X-1 the investigation of the X-ray flux variability provides a possibility to analyze the distribution and size of these structures. I found that the distribution follows a log-normal distribution with typical clump masses on the order of 10^{19} g. In GX 301-2 the hard X-rays emitted by the neutron star interact with the dense stellar wind, resulting in strong absorption and fluorescence lines. Using time resolved XMM-Newton spectra, I show that these features vary on time scales of a few 100s and result from the structures in the stellar wind. Using such detailed observations in combination with recently available theoretical models and simulations a better understanding of these systems and the behavior of matter under such extreme circumstances can be achieved.

Additional Information

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