# Long X-ray bursts: too long for comfort?

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## Abstract

In many X-ray sources on the sky, the X-ray emission arises because matter is accreted from a solar-like star onto a neutron star. When this matter has settled on the surface, it will undergo nuclear fusion. For a large range in physical parameters space, the burning is unstable, i.e. thermonuclear explosions on the neutron star will occur, lasting on the order of seconds to minutes. Such explosions are indeed observed as flares in the X-ray emission called 'X-ray bursts'. Recently, however, it has been discovered with the BeppoSAX/WFC and RXTE/PCA & ASM that sometimes very different flares occur, which share all characteristics with X-ray bursts, except that they last about one to two orders of magnitude longer. This is far too long to be understood in the context of the nuclear fusion picture presented above. I will discuss the observational properties of these extremely long thermonuclear explosions, as well as an intriguing possible cause.

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