

TYPE I X-RAY BURST SIMULATIONS WITH TIME-DEPENDENT ACCRETION RATES

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Type I X-ray bursts are periodic flares from the surface of accreting neutron stars, triggered when the accreted envelope is compressed to thermonuclear runaway. Although most bursts are observed from systems with steady accretion rates, they can also occur during transient accretion events. We are simulating X-ray bursts under time-dependent accretion for the first time, using multi-zone models with full nuclear burning, in order to reproduce the observations of such an event from the transient X-ray source SAXJ1808. A variable accretion rate will influence the observable properties of X-ray bursts, such as their frequency and luminosities. This unusual accretion regime will provide a unique opportunity to test our understanding of Type I X-ray bursts, and the thermonuclear burning of material under the extreme conditions of a neutron star.