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Thermonuclear flame propagation on neutron stars

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Accreted matter accumulated on a low magnetic field neutron star intermittently burns via thermonuclear runaway processes, and gives rise to bursts observed in X-rays. During the rise of the X-ray intensity, the thermonuclear flame spreads to engulf the entire stellar surface. Such flame propagation in extreme environment, which is relevant for several branches of physics, is an interesting field in its own right, and is important to probe the super-dense degenerate matter at stellar cores. I will discuss the theoretical and observational aspects of flame spreading, its importance, and why ASTROSAT will be very useful to advance our knowledge.

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