Physics Colloquium

Tuesday, November 7th at 3:30 pm in SC 234

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Type I Bursts: Magnetic Deflagrations On Neutron Stars

The Type I Bursts are powerful X-ray flashes from the surface of accreting neutron stars. They develop from the ignition of thermonuclear reactions and the spreading of the flame in the freshly accreted material. Outshining the accretion powered emission for tens of seconds, the Type I Bursts are one of the best observable phenomena of accreting neutron stars, and yet many questions remain unanswered.

The light curves of the bursts encode information about the mass and radius of the star which can be linked to the unknown equation of state core of the neutron stars. However, in order to unambiguously extract such information we need to know the details of the emission on the surface and that crucially depends on how the burning front propagates.

I will discuss the puzzling phenomenology of the bursts, focusing on the burning and flame propagation mechanism.

Refreshments at 3:00 pm in SC 103