Contribution ID: **47** Type: **contributed talk**

Type I Bursts Recurrence Time vs Accretion and Spin Rate

Thursday, 24 May 2018 11:30 (15 minutes)

When a neutron star in a binary system is accreting from its companion, the newly accumulated matter can undergo a thermonuclear runaway which spreads over the whole surface of the star: this results in extremely bright X-ray flashes called Type I Bursts.

Nuclear burning and its dependence on the mass accretion rate are fundamental ingredients for describing the bursts complicated observational phenomenology. A long standing puzzle is the increasing burst recurrence time versus increasing accretion rate experienced by many sources, while theory predicts that the recurrence time should constantly decrease (nearly) until stabilization.

I will show how, by considering different conditions across the stellar surface as a function of accretion rate and spin frequency, it is possible to resolve this apparent contradiction between theory and observations and I will discuss the implications of this scenario for our understanding of nuclear burning on neutron stars.

Primary author: Dr CAVECCHI, Yuri (Princeton University - University of Southampton)

Co-authors: Dr WATTS, Anna (University of Amsterdam); Dr GALLOWAY, Duncan (Monash Centre for Astrophysics, Monash University)

Presenter: Dr CAVECCHI, Yuri (Princeton University - University of Southampton)

Session Classification: Session M5