Contribution ID: **61** Type: **not specified**

New insights into the Galactic magnetar population

Monday 30 May 2022 17:50 (15 minutes)

The nature and origin of magnetars is a key question across a range of research areas, from fundamental physics to transient astrophysics, where they have been invoked as the engines of a variety of transients including fast radio bursts. It is currently unclear whether magnetars are a common outcome of core-collapse events - only appearing rare due to their short active lifetimes - or if their formation requires an unusual progenitor pathway. In this talk, we present the discovery of new magnetar near-infrared (NIR) counterpart candidates from deep Hubble Space Telescope imaging. We characterise the Galactic magnetar population in terms of their NIR colours and magnitudes, identifying at least one bound companion candidate through comparison with population synthesis predictions. The remainder of the genuine NIR counterparts likely have their emission dominated by either magnetospheric processes or dust disk emission. We then present predictions for the photometric properties and velocities of unbound (runaway) companions to natal neutron stars, and finish by discussing applications, including Galactic magnetar runaway companion searches with proper motion surveys. Understanding the companions, systemic velocities and natal environments of magnetars at a population level is key to unveiling their origins.

Presenter: CHRIMES, Ashley (Radboud University Nijmegen)

Session Classification: Parallel session