College of Natural Sciences & Mathematics
UNIVERSITY OF DENVER

Physics & Astronomy Colloquium

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Ultracompact White Dwarf Binaries in the Era of All-Sky Surveys

Compact binaries are short orbital period binaries in which the primary component is a stellar remnant. A relatively rare subclass, the ultracompact white dwarf binaries are systems with orbital periods shorter than 70 minutes that lack hydrogen. They are particularly important because they are expected to be abundant multimessenger sources, thus providing a unique opportunity to explore a plethora of astrophysical phenomena. However, despite the fact that several sophisticated and sensitive telescopes have increased their detection in recent decades, the observed number is still well below expectations. In this talk, I will describe how data from current all-sky surveys can be used to identify new systems by exploiting their transient behavior. These observations have also allowed us to study their outbursts in the most detailed way so far. I will highlight the importance of including irradiation and mass-transfer enhancement in traditional accretion models. Additionally, I will discuss the implications of recent findings for the detection of such binaries by the next generation of all-sky surveys such as LSST.

https://lilianariverasandoval.com/research/