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Circumbinary planets with the LISA space mission

Friday 17 January 2025 14:00 (25 minutes)

The discovery and study of exoplanets in their diversity is arguably one of the most exciting development in astronomy over the past 25 years, rivalled by the detection of gravitational waves.
In this talk I will merge these two fields presenting an original observational method which employs gravitational waves to detect exoplanets.
In particular I will show how the Laser Interferometer Space Antenna (LISA) mission will be able to observe Jupiter-like exoplanets orbiting compact white dwarfs binaries emitting gravitational waves at mHz frequencies.
This technique will allow us to both overcome the selection bias of current electromagnetic detection techniques, whose observations are limited to the Solar neighbourhood, and to search for post-main sequence exoplanets everywhere within the Milky Way and the Magellanic Clouds.
Detections by LISA will deepen our knowledge on the life of Magrathea exoplanets subsequent to the most extreme evolution phases of their hosts, clarifying whether new phases of planetary formation take place later in the life of the stars.

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Session Classification: Future perspectives