



The detection of circumbinary exoplanets through gravitational waves astronomy

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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 white dwarfs binaries. 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 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. Finally, in the spirit of the new era of multi-messenger astronomy, I will discuss the possibilities that could open for the field of exoplanets when standard electromagnetic techniques work in synergy with gravitational-wave astronomy.