The Beginnings and Ends of Double White Dwarfs

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Multi-messenger Galactic Astronomy with double white dwarfs

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The upcoming LISA mission is the only experiment that offers the opportunity to map the Milky Way through gravitational wave radiation, exploiting signals from double white dwarf (DWD) binaries. I will show that the large number of DWD detections will allow us to use these systems as tracers of the Milky Way's shape and to measure scale parameters of the bulge, disc and bar. Furthermore, in the coming years, a large number of DWDs can be simultaneously detected in both electromagnetic (e.g. with Gaia and LSST) and gravitational wave radiation. This will provide a unique opportunity to perform a multi-messenger study of the Galaxy. Finally, I will talk about the prospects of using GW signals from halo DWDs as a tool for detecting "invisible" satellites galaxies and stellar streams in the Milky Way outer halo.

Primary author: KOROL, Valeriya (Leiden Observatory)

Presenter: KOROL, Valeriya (Leiden Observatory)

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