



The Beginnings and Ends of Double White Dwarfs

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Double white dwarf merger remnants as low frequency gravitational wave sources

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We propose a new category of low frequency gravitational wave sources related to mergers of double white dwarfs. A remnant just after a merger is a rapidly and differentially rotating objects, which may develop non-axisymmetric instability of hydrodynamical origin. If the remnant is susceptible to the so-called 'low T/W' instability, $m=2$ (bar) or $m=1$ (spiral) density pattern may develop (here m is the azimuthal quantum number of perturbation) and the mass quadrupole may oscillate with a typical frequency of $O[0.1-1]$ Hz. We discuss the detectability of newly-born remnants by the planned spaceborne gravitational wave observatories targeting intermediate frequency range such as DECIGO, Big Bang Observer, and TianQin.

Author: Dr YOSHIDA, Shin (The University of Tokyo)

Presenter: Dr YOSHIDA, Shin (The University of Tokyo)

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