



ID de Contribution: 55

Type: Non spécifié

Searching for Close Binary System in Milky Way Galaxy as Potential Gravitational Wave Sources

Close White Dwarf Binary systems in Milky Way Galaxy are important in two major fields of astrophysics. 1) Potential source of background gravitational wave and 2) Potential progenitors of Type Ia supernovae.

1) Potential Source of Gravitational Wave Background

Although the individual contribution is small, integrating numerous white dwarf systems may contribute to a gravitational wave background. By combining GAIA and Sloan Digital Sky Survey Data, we can study the census of binary populations.

2) Type Ia supernova (SNIa) plays a critical role on the study of dark energy. After 30 years of intensive study of SNIa, we still do not know the identity of the progenitor system, and we are still debating single or double degenerate systems. By studying the close white dwarf binary systems in Milky Way, we can estimate the yields of SNIa from Milky Way Galaxy.

We will present our ongoing census of binary systems in Milky Way.

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Classification de Session: Poster session

Classification de thématique: No track