Contribution ID: 24

Wide binary disruption by dark matter boson stars

Thursday 9 May 2024 14:40 (20 minutes)

A population of wide-separation binary star systems can be susceptible to small-scale gravitational perturbations, including those from dark matter. Bosonic stars are spatially extended objects that can not be treated as point particles. I will talk about a complete and analytic treatment for tidal disruption with a potential composed of randomly distributed diffuse objects, and then discuss their evaporation effects on isolated, a.k.a. 'halo-like' wide binary systems in our Galaxy. In the recent GAIA dataset, thousands of such binary systems have been identified and their spatial separation can be as large as 0.1 - 1 parsec. The binary evaporation effect is potentially sensitive to dark matter solitons with much heavier particle masses in comparison to those from larger scale effects.

Collaboration (if any)

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Track Classification: 01 - 暗物质理论