

Friday, January 19th
4:10 – 5:00 PM
Roberts Hall Room 101

Studies of Tides in Binary Compact Stars with Gravitational Waves

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Abstract: The extreme density and strong gravity make compact stars the ideal test ground for nuclear physics and gravity theory. Close binary systems formed by these objects emit gravitational waves that can be captured by the current ground-based detector network as well as the future space-borne detectors, providing a powerful probe to physics in this regime. The non-uniformity of the gravity field in such close separations can significantly deform the stars, causing them to be stretched, squeezed, or even oscillate, and can therefore leave a trace in the signal detected. In this talk, I will discuss my MPhil/PhD research on neutron stars and white dwarfs with gravitational waves. First, I will give an overview of the tidal interactions of binary compact stars and the gravitational waves from these systems. Then, I discuss the case with binary neutron stars, specifically on what we can learn about the matter properties inside the star. Lastly, I will talk about how the tides can be measured in future detections of gravitational waves from binary white dwarfs within our galaxy.

Host: Hang Yu

** Refreshments served in the Barnard Hall second floor atrium at 3:45 PM **