# GRAVITATIONAL WAVE MEMORY EFFECT: SOME THEORETICAL AND PHENOMENOLOGICAL ASPECTS

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## Abstract

In this talk, I will focus on some of our recent works on various aspects of gravitational wave memory effect. First, I will be talking about GW memory effect in the context of a certain class of ECOs or 'BH mimickers'. Motivation behind this work is to see whether memory effect can be used as a future pointer towards exploring non-BH compact objects. We choose a class of wormhole solutions in this regard. The presence of extra dimension and the wormhole nature of the spacetime geometry gets imprinted in the memory effect. Since future gravitational wave detectors will be able to probe the memory effect, the present work provides another avenue to search for compact objects other than black holes. In the next part of my talk, I will be talking about GW memory, studied in the context of supernova neutrinos. Here I will discuss the impact of of neutrino self-interactions in the GW memory signal. Our results reveal that memory signals for self-interacting neutrinos are weaker than free-streaming neutrinos in the high-frequency range. I will also talk about the implications for detecting and differentiating between such signals for planned space-borne detectors like DECIGO, BBO and LISA.

## Venue

**PAMU Seminar Room**

**A.N. Kolmogorov Building, ISI, Kolkata**

## Date & Time

**26 June, 2025**
**03:00 PM**

*Everyone is invited to attend*