Contribution ID: **90** Type: **Oral**

A detection mechanism for black hole memory effect

The gravitational memory effect manifests the permanent relative separation between two test masses, initially held at relative rest, upon interaction with the gravitational waves. It is also shown, that this memory effect is related to the BMS symmetries that emerge at the asymptotic region of spacetimes where the test masses are placed. A similar effect can be obtained near the horizon of black holes and termed the black hole memory effect. We outline a model for the detection of such near-horizon memory and show an observable effect can be obtained in the upcoming gravitational wave detectors.

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Session Classification: Classical & Quantum Gravity

Track Classification: Classical & Quantum Gravity