

Asymptotic symmetries and observables in 4d gravity

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In this talk I will review recent progress in our understanding of large-distance features of gravity in (3+1)-dimensional asymptotically flat spacetimes. I will explain how one can extract from the asymptotic expansions of Einstein's equations a tower of charges whose conservation governs the low-energy (or soft) expansion of a graviton to all orders. The first in this tower are supertranslation charges well-known to generate 4d BMS transformations, while the leading soft graviton mode is directly related to the gravitational memory effect. I will conclude by discussing the potential relevance of these ideas for experiments aiming to probe vacuum spacetime fluctuations in quantum gravity.

Working Group

WG5 - Connection between low-energy and high-energy quantum gravity

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