

BMS particles

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Wavefunctions for unitary irreducible representations (UIRs) of the Bondi-Metzner-Sachs (BMS) group are constructed. They are shown to describe quantum superpositions of (Poincaré) particles propagating on inequivalent gravity vacua. This follows from reconsidering McCarthy's classification of BMS group UIRs through a unique, Lorentz-invariant but non-linear, decomposition of supermomenta into hard and soft pieces.

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