

Bethe Colloquium

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BMS Particles

The concept of a particle is one of the basic building blocks of physics. In flat spacetime, particles are classified according to the symmetries of special relativity – the Poincaré group – and are characterized by familiar quantities such as mass and spin. Gravity, however, changes this picture in a subtle way. Even far away from all matter, spacetime possesses an infinite-dimensional symmetry known as the Bondi-Metzner-Sachs (BMS) group. In this talk, I will introduce the notion of a “BMS particle”: a quantum state classified by the BMS group rather than only by the Poincaré group. I will explore how this broader notion offers a new perspective on the infrared physics of gauge theories and gravity, and sheds new light on the holographic description of spacetime.

BCTP, Room W 2.019 - Wegelerstr. 10 - 53115 Bonn
Thursday, September 17, 2026 at 4:15 p.m.

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