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Metric reconstruction for non-radiative spacetimes

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Multipole moments are important quantities to characterize spacetimes. In General Relativity, the most general vacuum solution with no incoming radiation is parametrized by two sets of infinite multipole moments. In this talk, we focus on non-radiative spacetimes and provide a characterization thereof in terms of a tower of multipole moments. This tower encodes non-radiative and non-stationary features of the gravitational field at null infinity, and generalizes the Geroch-Hansen moments for stationary spacetimes. Moreover, such a tower of moments is identified with charges associated to the $Lw_{1+\infty}$ algebra recently discovered in the structure of asymptotically flat spacetimes.

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