

Carroll theories from Lorentzian light-cone actions

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Light-cone Minkowski spacetime, comprising two null coordinates, is one of the simplest examples of a Bargmann manifold.

By deforming Lorentzian light-cone theories in $(d+1)$ dimensions, we derive d -dimensional Carroll theories via null reduction from Bargmann spacetimes. While the magnetic Carroll sector can be directly obtained from the relativistic parent light-cone action, the deformation is essential for obtaining the electric Carroll sector. For theories with gauge symmetry, we highlight the role of the light-cone gauge condition in the Carrollian dynamics.