

The Role of Spacetime Geometry in Gas Dynamics

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In the first part, we examine how the geometric framework of the underlying spacetime provides powerful insights for analyzing wave equations, with a focus on the pioneering ideas of S. Klainerman in the 1980s and his collaborative work with D. Christodoulou on the nonlinear stability of Minkowski spacetime. The second part of the talk will demonstrate applications to the compressible Euler equations, revealing critical perspectives into shock formation mechanisms, the construction of centered rarefaction waves, and the structure of the singularities.

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