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On the unique evolution of solutions to wave equations

Wednesday, 9 October 2019 09:45 (35 minutes)

The well-known theorem of Choquet-Bruhat and Geroch states that for given smooth initial data for the Einstein equations there exists a unique maximal globally hyperbolic development. In particular, the time-evolution of globally hyperbolic solutions is unique. This talk investigates whether the same results hold for quasilinear wave equations defined on a fixed background. We first present an example of a quasilinear wave equation for which unique evolution of smooth globally hyperbolic solutions in fact fails and contrast this case with the Einstein equations. We then proceed by presenting conditions which guarantee unique evolution. This talk is based on joint work with Felicity Eperon and Harvey Reall.

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