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INITIAL DATA MAPPINGS IN GENERAL RELATIVITY

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Abstract:

We study initial data in general relativity, which are defined as solutions to the constraint equations.

The focus in this talk is a modified version of the conformal method proposed by David Maxwell. While the model seems more strongly justified from a geometrical standpoint, the resulting system becomes significantly more difficult to solve; it presents critical nonlinear terms, including gradient terms. We work in dimensions 3,4 and 5, under smallness assumptions and in the presence of a scalar field with positive potential.

The tools we use are related to obtaining a priori estimates (compactness results).