Some rigidity results for compact initial data sets

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In this lecture, we aim to present some rigidity results for compact initial data sets, in both the boundary and no boundary cases. For example, under natural energy, boundary, and topological conditions, we obtain a global version of a well-known result of H. Bray, S. Brendle, and A. Neves. We also prove an extension of a result obtained, in a previous work, by M. Eichmair, G.J. Galloway, and the author. Finally, as time permits, we are going to present an example in order to illustrate the last result presented in this lecture. This is part of a joint work with G.J. Galloway.