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Mathematics > Differential Geometry

The Cauchy problems for Einstein metrics and parallel spinors

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We show that in the analytic category, given a Riemannian metric g on a hypersurface $M\subset \Z$ and a symmetric tensor W on M, the metric g can be locally extended to a Riemannian Einstein metric on $\Z$ with second fundamental form W, provided that g and W satisfy the constraints on M imposed by the contracted Codazzi equations. We use this fact to study the Cauchy problem for metrics with parallel spinors in the real analytic category and give an affirmative answer to a question raised in B\"ar, Gauduchon, Moroianu (2005). We also answer negatively the corresponding questions in the smooth category.

Comments:	30 pages; new version including counterexamples to the Cauchy problem for Einstein metrics in the smooth setting
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