José Antonio Sánchez Pelegrín

A prescribed mean curvature problem in spatially closed Generalized Robertson-Walker spacetimes

In this work we study a mean curvature prescription problem that appears when trying to characterize spacelike slices in a spatially closed Generalized Robertson-Walker (GRW) spacetime by their volume variation. Thus, we obtain several uniqueness results for the entire solutions of a nonlinear elliptic PDE on compact manifolds. In particular, we solve a Calabi-Bernstein type problem under physically realistic assumptions in some relevant spacetimes such as de Sitter spacetime, Einstein GRW spacetimes and GRW spacetimes that obey the Null Convergence Condition.

References

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