Curvature Estimates in Asymptotically Flat Lorentzian Manifolds

Felix Finster and Margarita Kraus

Abstract. We consider an asymptotically flat Lorentzian manifold of dimension (1, 3). An inequality is derived which bounds the Riemannian curvature tensor in terms of the ADM energy in the general case with second fundamental form. The inequality quantifies in which sense the Lorentzian manifold becomes flat in the limit when the ADM energy tends to zero.