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General relativistic mass in low regularity

The ADM mass of a smooth asymptotically flat 3-manifold  $M$  provides a well-defined notion of the total mass of  $M$ , viewed as an appropriate spacelike hypersurface in a (3+1)-dimensional spacetime. However, due to its explicit dependence on metric derivatives, the ADM mass is challenging to work with for low-regularity metrics and under low-regularity convergence. Interest in such settings arises from, for example, the near-equality case of the positive mass theorem and also Bartnik's mass minimization problem. In this talk I will survey some approaches to mass in low regularity, discuss how mass behaves in this context, and indicate possible applications to the aforementioned problems.