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Stability of marginally outer trapped surfaces and geometric inequalities

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Marginally outer trapped surfaces (MOTS) admit a notion of stability that in many respects generalizes a similar notion for minimal hypersurfaces. Stable MOTS play an interesting role in a number of geometric inequalities involving physical parameters such as area, mass, charge or, in the axially symmetric case, angular momentum. Some of those inequalities are global in nature while others are local, with interesting relationships between them. In this talk I will introduce the notion of stable MOTS and describe some of the geometric inequalities conjectured for them.