Mathematics > Analysis of PDEs

Morawetz estimates for the wave equation at low frequency

András Vasy, Jared Wunsch

(Submitted on 3 Nov 2010)

We consider Morawetz estimates for weighted energy decay of solutions to the wave equation on scattering manifolds (i.e., those with large conic ends). We show that a Morawetz estimate persists for solutions that are localized at low frequencies, independent of the geometry of the compact part of the manifold. We further prove a new type of Morawetz estimate in this context, with both hypotheses and conclusion localized inside the forward light cone. This result allows us to gain a 1/2 power of t decay relative to what would be dictated by energy estimates, in a small part of spacetime.

Subjects: **Analysis of PDEs (math.AP)**; Mathematical Physics (math-ph)
Cite as: **arXiv:1011.0906v1 [math.AP]**

Submission history

From: Jared Wunsch [view email]
[v1] Wed, 3 Nov 2010 15:04:24 GMT (26kb)

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