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Local smoothing for the wave equation in 2+1 dimensions

Sogge's local smoothing conjecture for the wave equation predicts that the local L^p space-time estimate gains a fractional derivative of order almost $1/p$ compared to the fixed time L^p estimates, when $p > 2n/(n-1)$. Jointly with Larry Guth and Hong Wang, we recently proved the conjecture in $\mathbb{R}^{2+1}$. I will talk about a sharp square function estimate we proved which implies the local smoothing conjecture in dimensions $2+1$. A key ingredient in the proof is an incidence type theorem.