HONG WANG, MIT

A restriction estimate in $\mathbb{R}^3$

If f is a function supported on a truncated paraboloid, what can we say about Ef, the Fourier transform of f? Stein conjectured in the 1960s that for any $p > 3$, $\|Ef\|_{L^p(R^3)} \lesssim \|f\|_{L^\infty}$. We make a small progress toward this conjecture and show that $p > 3 + 3/13 \approx 3.23$. In the proof, we combine polynomial partitioning techniques introduced by Guth and the two ends argument introduced by Wolff and Tao.