

Local smoothing of Fourier integral operators and Hermite functions

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In this talk, we discuss a local smoothing estimate for Fourier integral operators of the form

$$\mathcal{F}f(x, t) = \int_{\mathbb{R}^2} e^{i(x \cdot \xi + t|\xi|)} a(x, t, \xi) \hat{f}(\xi) d\xi$$

for a wide class of symbols $a \in S^m(\mathbb{R}^2 \times \mathbb{R} \times \mathbb{R}^2)$, $m \leq 0$. Our result generalises the well known local smoothing estimate of Mockenhaupt, Seeger and Sogge appeared in 1992, to a global result with respect to the space variable. We use only a mild decay assumption on the amplitude function. The novelty in our approach is the use of Hermite functions in the study of Fourier integral operators. This is a joint work with Ramesh Manna.