



Sharp microlocal Keakeya-Nikodym estimates for Hörmander operators and spectral projectors

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摘要: In this talk, we establish Keakeya - Nikodym bounds for oscillatory integral operators by employing refined decoupling techniques and incidence, which unifies the study of Keakeya - Nikodym estimate for eigenfunctions and restriction problems. As applications, we obtain improved Keakeya - Nikodym estimates for eigenfunctions in all dimensions greater than 3. Furthermore, we derive a refined and sharp (p, q) restriction estimate, extending the results of Guth. In particular, we refine the work of Guth-Hickman-Iliopoulou, which gives sharp (p, q) estimates for elliptic phase for odd dimensions. In some sense, this solves the problem completely for odd dimensions.

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主要研究调和分析及其在偏微分方程中的应用。主要关注与限制性猜想有关的问题, 例如局部光滑估计猜想, 平方函数不等式, 解耦不等式, Bochner-Riesz 平均, Keakeya 猜想等。研究过程中会交叉涉及数论, 组合数学, 偏微分方程等学科中的工具, 同时又促进这些学科的发展。