Aleksandar Bulj, University of Zagreb: Asymptotic behavior of L^p estimates for a class of multipliers with homogeneous unimodular symbols

ABSTRACT: Boundedness of Fourier multiplier operators on L^p spaces is a well studied problem in harmonic analysis, but since the boundedness of some important multipliers is still unknown, it is still an active area of research. The aim of this talk is to present the recent joint work with Vjekoslav Kova regarding the asymptotic behaviour when $\lambda \to \infty$ of L^p norms of the Fourier multiplier operators associated to the homogeneous symbols $e^{i\lambda\phi(\cdot/|\cdot|)}$, where ϕ is a smooth function on $(n-1)$-dimensional sphere in $\mathbb{R}^n$. We prove sharp bounds for such operators in even dimensions, giving a negative answer to a question posed by Vladimir Maz'ya regarding the asymptotic growth of the norms of such operators when $n \geq 2$. Concrete operators that fall into the studied class are the multipliers forming the two-dimensional Riesz group and we give sharp asymptotic bounds for that family of operators, answering the question raised in the work of Dragičević, Petermichl, and Volberg about the sharpness of the asymptotic bounds for the aforementioned family of operators.

Aleksandar Bulj, PMF-MO: Asimptotsko ponaanje L^p ocjena za jednu klasu multiplikatora

SAŽETAK: Ograničenost Fourierovih multiplikatora na L^p prostorima problem je koji se dugo proučava u harmonijskoj analizi. Međutim, kako je ograničenost važnih multiplikatora i dalje otvoren problem, to je i dalje aktivno područje. Cilj prezentacije je predstaviti zajednički rad sa V. Kovačem u kojem proučavamo asimptotsko ponašanje, za $\lambda \to \infty$, L^p - normi Fourierovih multiplikatora pridruženih simbolu $e^{i\lambda\phi(\cdot/|\cdot|)}$, gdje je ϕ glatka funkcija na $(n-1)$-sferi u $\mathbb{R}^n$. Dokazom strogih L^p ocjena takvih multiplikatora opovrgavamo slutnju Vladimira Mazye o asimptotskom rastu normi navedenih operatora. Konkretni operatori koji upadaju u danu klasu su multiplikatori koji čine dvodimenzionalnu Rieszovu grupu, za koje dokazom strogih ocjena afirmativno odgovaramo na pitanje Dragičevića, Volberga i Petermichel o strogosti ocjena za takve operatore.