Gagliardo-Nirenberg inequalities for Fourier multipliers

Prof. Dirk Hundertmark

Karlsruhe Institute of Technology

01/04/2025, ore 12:00

Sezione di Matematica del DICATAM

Abstract: Gagliardo-Nirenberg inequalities for the Laplacian are well--know. The situation is quite different when one considers general Fourier multipliers. It turns out that a natural form of a Gagliardo Nirenberg type bound, more precisely, their extension to orthonormal families, exists for general Fourier multipliers. Moreover, this Gagliardo-Nirenberg typoe bound is dual to a semiclassical Lieb-Thirring bound for generalized Schrödinger operators. If time permits, we also discuss a Sobolev-Trudinger type bound for Fourier-multipliers, which is dual to a Cwikel-Lieb-Rozenblum type bound for generalized Schrödinger operators. This bound is not semiclassical, however, even though for the usual Schrödinger operators, it disguised itself as a semi-classical bound.