

Recent Results on Lieb-Thirring Inequalities

Rupert Frank

Caltech / LMU Munich

`rlfrank@caltech.edu`

Lieb-Thirring inequalities are a mathematical expression of the uncertainty and exclusion principles in quantum mechanics. Since their discovery in 1975 they have played an important role in several areas of analysis and mathematical physics. We provide a gentle introduction to classical aspects of this subject and present some recent progress. Finally, we discuss extensions, in the spirit of Lieb-Thirring inequalities, of several inequalities in harmonic analysis to the setting of families of orthonormal functions.