ON HARDY'S UNCERTAINTY PRINCIPLE

MICHAEL COWLING

Abstract

A theorem of Hardy states that, if a function f and its Fourier transform $\hat{f}$ both decay as fast as the standard Gaussian ($x \mapsto e^{-x^2/2}$), then f is itself a multiple of the Gaussian. Hardy's proof involves some very delicate complex analysis, and does not lend itself to generalisation. Recently, efforts have been made to avoid the use of complex analysis in the proof. This talk surveys the problem and recent progress.

Department of Mathematics, UNSW, Sidney, Australia
E-mail address: michaelgcowling@gmail.com