

HILBERT TRANSFORM, NEVANLINNA CLASS AND TOEPLITZ KERNELS

ARUN KUMAR BHARDWAJ

Abstract:

The celebrated integral transforms such as Fourier transform, Laplace transform, and Hilbert transform have tremendous applications in various branches of science and engineering. However, unlike to Fourier or Laplace transform, very few functions have an explicit formula for their Hilbert transforms. In this article we obtain an explicit formula for the Hilbert transform of $\log |f|$, for the function f in Nevanlinna class having continuous extension to the real line. This family is the largest possible for which such a formula for the Hilbert transform of $\log |f|$, can be obtained. The formula is very general and implies several previously known results.