

On the Ingham-Karamata theorem

Gregory Debruyne
Ghent University (Belgium)

`gregory.debruyne@ugent.be`

Abstract

The Ingham-Karamata theorem is a cornerstone in Tauberian theory. It provides a simple and easy-to-use tool to deduce asymptotic formulas of functions from information about their Laplace transform, a standard application being the deduction of the prime number theorem from the absence of ζ -zeros on the line $\Re s = 1$, but there are many more.

Nevertheless, in its original formulation, the theorem is still a bit rigid and only applies if the function and its Laplace transform have a certain prescribed behavior. In this talk, I will give an overview of the research I carried out in the past few years on generalizations of this theorem involving for a much more general behavior on both the functions and/or its Laplace transforms which I anticipate should lead to many more new applications.