

MAT2000 PROJECT PROPOSAL: TAUBERIAN THEOREMS

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Tauberian theory is a classical area of analysis traditionally concerned with inverse theorems for summability methods.

Part of the roots of the subject lie in harmonic analysis. Some well-known applications of Tauberian theorems in number theory include a proof of Mertens' theorems [1, Theorem 4.10] and a even of the the prime number theorem [7]. Tauberian theory has also found many applications in probability theory [2]. In 1932, Wiener provided a general Tauberian theory in [8] based on Fourier transforms, which led to the development of the theory of Banach algebras by Gel'fand and others.

The goal of this project will be to become familiar with different summability methods, to understand Weiner's theory, and to study several important applications of Tauberian theorems. An understanding of integral transforms will be helpful. Some standard references to the subject are [3, 4, 5]. A short introduction to the subject may be found in [6, Chapter 9].

REFERENCES

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