1133-42-129 **Paul Hagelstein*** (paul_hagelstein@baylor.edu), Department of Mathematics, Baylor University, Waco, TX 76798. *Tauberian Constants in Harmonic Analysis.*

Let $\mathcal{B}$ denote a collection of measurable sets in $\mathbb{R}^n$, and define the corresponding maximal operator $M_{\mathcal{B}}$ by

$$M_{\mathcal{B}}f(x) = \sup_{x \in R \in \mathcal{B}} \frac{1}{|R|} \int_R |f| \ .$$

For $0 < \alpha < 1$, the associated Tauberian constant $C_{\mathcal{B}}(\alpha)$ is given by

$$C_{\mathcal{B}}(\alpha) = \sup_{E \subset \mathbb{R}^n : 0 < |E| < \infty} \frac{1}{|E|} |\{x \in \mathbb{R}^n : M_{\mathcal{B}}\chi_E(x) > \alpha\}| \ .$$

Tauberian constants provide considerable information regarding the basis $\mathcal{B}$. For example, a classical result of Busemann and Feller is that, provided $\mathcal{B}$ is homothecy invariant, $\mathcal{B}$ is a density basis if and only if $C_{\mathcal{B}}(\alpha) < \infty$ for every $0 < \alpha < 1$. In this talk, we will present recent results involving Tauberian constants and associated applications to the Halo Conjecture, Solyanik estimates, weighted norm inequalitites, and necessary and sufficient conditions for a translation invariant centered differentiation basis to be a density basis. (Received July 19, 2017)