Asymptotic Behavior of the Eigenvalues of Certain Integral Operators of Finite Convolution Type

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Abstract: We are going to discuss some techniques and ideas used by H. Widom\textsuperscript{1} for finding the asymptotic behavior of the eigenvalues of certain integral operators, such as $Tf(x) = \int_{-1}^{1} k(x-y)f(y) \, dy$, under the assumptions that $\hat{k}$ is even, positive and decays at infinity. In particular, we will study the case when $-\ln \hat{k}(\xi)$ has growth proportional to that of $\xi$, at infinity, in detail, and will touch upon the remaining two cases of the growth (i.e. slower or faster than $\xi$) of $-\ln \hat{k}(\xi)$.