

ESTIMATES FOR THE NUMBER OF  
EIGENVALUES OF NON-SELF-ADJOINT  
OPERATORS

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**Abstract**

In this dissertation we find estimates for the total number of eigenvalues of non-self-adjoint operators. We consider five different operators, three of them discrete and two continuous. Discrete operators are as follows: Schrödinger operator defined on  $\mathbb{Z}_+$  with a complex potential, Schrödinger operator defined on  $\mathbb{Z}$  with a complex potential, and a Dirac operator defined on  $\mathbb{Z}$ , also with a complex potential. The latter of which we will also define in this dissertation, as, to the best of our knowledge, it has not yet been defined. Then we also consider a continuous Biharmonic operator on  $\mathbb{R}^3$ , and then a Polyharmonic operator of order  $2l$  on  $\mathbb{R}^d$ , both perturbed by a complex potential. For each of these operators we will find uniform bounds for the total number of eigenvalues located outside of their continuous spectrums. By ‘uniform bounds’ we mean bounds which depend on the potential only through some simple quantities like  $L^p$  norms.