

Spectral Asymptotics for Dirac Operators on Non-Compact Graphs

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Abstract: *In this paper, we explore the spectral asymptotics of Dirac operators defined on non-compact graphs. Dirac operators, as first-order differential operators, are crucial in both quantum mechanics and graph theory, especially in the study of fermionic systems. We investigate how the spectral properties of these operators behave when applied to non-compact graphs, with a particular focus on the asymptotic distribution of eigenvalues. By employing advanced techniques in functional analysis, spectral theory, and graph theory, we derive results on the growth of eigenvalues at large indices and examine their connection to the geometric and topological features of the underlying graphs.*

Keywords: Quantum mechanics, topological features, Graph Laplacians.