

Seminar Operator Theory - Technische Universität Graz, Graz, October 8, 2026

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Title: Eigenvalue bounds for quantum dot Dirac operators using $\bar{\partial}$ -Robin Laplacians

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Abstract: This talk exploits a new connection between quantum dot Dirac operators and $\bar{\partial}$ -Robin Laplacians defined in bounded C^2 domains $\Omega \subset \mathbb{R}^2$. First, we find a graphical relation between their smallest positive eigenvalues. As a byproduct, we deduce a recipe for translating upper and lower bounds from one to the other. As an application of this, we provide new upper and lower bounds for the eigenvalues of the quantum dot Dirac operators, which depend only on geometric quantities of Ω .