



Prof. Jussi Behrndt

TU Graz

Spectral theory for differential operators with singular potentials

In this talk, we discuss qualitative spectral properties of self-adjoint Schrödinger and Dirac operators. We first briefly review some of the standard results for regular potentials from the literature and turn to more recent developments afterwards. Our main objective in this lecture is to discuss differential operators with singular potentials supported on curves or hyperplanes, where in the case of Dirac operators it is necessary to distinguish the so-called non-critical and critical cases for the strength of the singular perturbation. In particular, it turns out that Dirac operators with singular potentials in the critical case have some unexpected spectral properties.

This talk is based on joint some recent works with P. Exner, M. Holzmann, V. Lotoreichik, T. Ourmieres-Bonafos, and K. Pankrashkin.

March 4, 2026, Architecture building, HS11
15:30 – 16:30 Technikerstraße 13a