



Guest Lecture

**Dr. Sabine Bögli**

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**Spectral approximation for singular  
differential operators via domain truncation**

October 24, 2017 – 14:00

Room 8.526, University of Stuttgart, Pfaffenwaldring 57

Abstract: We study spectral convergence for sequences of unbounded linear operators  $T_n$ ,  $n \in \mathbb{N}$ , that converge to some operator  $T$  in strong resolvent sense. It is well known that, even in the case of purely discrete spectra, the eigenvalues of  $T_n$  may accumulate at a point that is not an eigenvalue of  $T$ . In addition to the occurrence of such spurious eigenvalues, for non-selfadjoint operators not every eigenvalue of  $T$  may be approximated. We present sufficient conditions that prevent the occurrence of these two unwanted phenomena. The results are applied to non-selfadjoint Schrödinger operators in  $L^2(\mathbb{R}^d)$  that are truncated to bounded but expanding domains in  $\mathbb{R}^d$  (based on joint work with P. Siegl and C. Tretter).

**Local spectral convergence in the presence of  
essential spectrum**

October 26, 2017 – 9:45

Room 8.526, University of Stuttgart, Pfaffenwaldring 57

Abstract: In this talk we consider sequences of linear operators that converge in strong resolvent sense to an operator with possibly non-empty essential spectrum. The goal is to identify regions in the complex plane where we have spectral convergence. The results are applied to differential operators, in particular to Schrödinger operators with complex potentials that decay at infinity.

