

Quantum Fokker-Planck models: kinetic and operator theory approaches

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Dissipative open quantum systems like quantum-Fokker-Planck (QFP) models play an important role for quantum Brownian motion, quantum optics, and the numerical simulation of nano-semiconductor devices. Their time evolution can either be described by quantum kinetic Wigner function models or in the density matrix formalism.

We shall use tools from operator theory and quantum probability to establish the existence of a unique (normalized) steady state and convergence to them. The proofs cover quadratic confinement potentials along with sub-quadratic perturbations.