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Quantum stochastic differential equations with unbounded coefficients and dilations of Feller's minimal solution. (English) Zbl 0751.60062

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Summary: Quantum stochastic evolutions are constructed for unbounded coefficients and infinitely many noise components. A sufficient condition for the evolution to be conservative is obtained. The theory is then used in dilating Feller's minimal process, associated with an unbounded Markov generator, in boson Fock space. A necessary and sufficient condition for the dilation to be conservative is obtained. It is also shown how to realize the minimal process as a commutative stochastic flow. A notion of quantum exit stop time is introduced.

MSC:

60H99 Stochastic analysis

Keywords:

quantum stochastic differential equation; Quantum stochastic evolutions; unbounded coefficients; boson Fock space; quantum exit stop time