Singular perturbations of quantum dynamical semigroups
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We describe an approach to strongly continuous quantum dynamical semigroups [2,3,7] via completely positive perturbations of their (in general, unbounded) generators. The semigroup is standard if its generator is “of Lindblad’s type” [6], i.e. it is obtained by a completely positive perturbation of a “no-event” generator. Then we consider two cases of dynamical semigroups obtained by singular rank-one perturbations of a standard generator. First, we describe an example which gives a positive answer to a conjecture of Arveson [1] concerning possible triviality of the domain algebra. Second, we consider an improved and simplified construction [4,5] of a nonstandard dynamical semigroup outlined previously in our short communication. This gives answer to an old question on existence of dynamical semigroups with non-Linbladian generators.

References:

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