Exponential Stability for Port-Hamiltonian Systems

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The decoherence-free subalgebra $\mathcal{N}(\mathcal{T})$ is the maximal sub-algebra where a open quantum system, described by a uniformely continuous Quantum Markov Semigroup (QMS), behaves a a closed system. Many information about the QMS can be deduced by the structure of it. In particular, where $\mathcal{N}(\mathcal{T})$ is atomic, it induces a block diagonal representation for the generator of the semigroup providing a natural decomposition of it. We extend this result by using the decomposition of the decoherence-free subalgebra in direct integrals of factors, obtaining a structure theorem for every uniformly continuous QMSs. Moreover we prove that, when there exists a faithful normal invariant state, f$\mathcal{N}(\mathcal{T})$ has to be atomic and decoherence takes place.

References

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