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Locality estimates for complex-time evolution in 1D

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For one.dimensional quantum spin systems with finite-range interactions, Araki (1969) proved that the infinite volume time-evolution of a local observable is analytic on the complex plane and satisfies a locality property in the spirit of Lieb-Robinson bounds. We discuss an extension of this result to a more general class of interactions (e.g., with exponential decay) and its application to the spectral gap problem for parent Hamiltonian of PEPS and the study of the exponential clustering property for (infinite-volume) thermal states.