Bologna Workshop on:
CFT AND INTEGRABLE MODELS
and their applications from gauge/gravity dualities to statistical mechanics and quantum information

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Quench dynamics of entanglement entropy under projective charge measurements

The quasiparticle picture provides simplest and yet most effective way to study the out-of-equilibrium evolution of entanglement measures following a quantum quench at the ballistic scale. It has found applications in the study of R´enyi entropies and negativities in free and interacting systems. I will present a novel point of view for this rather dated subject, according to which the quasiparticle picture in free fermionic systems is interpreted operatorially. I will then show how this framework can be used to approach analytically the problem of characterizing the interplay between unitary evolution and projective measurements of U(1) conserved charges over macroscopic subsystems, which are repeated periodically and tend to destroy entanglement. I will finally commenton the possibility to extend results to interacting systems, by combining free fermionic insights with spacetime duality.

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