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Nonequilibrium Quantum Field Theory

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I will talk about theoretical developments for describing nonequilibrium phenomena based on quantum field theory. The concept of conserving approximations, introduced by Kadanoff and Baym based on the Luttinger-Ward functional for the grand thermodynamic potential, has played a central role on this topic. I will give an historical survey and also present some recent developments to perform the vertex renormalization based on the Luttinger-Ward functional.