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Quantum correlation of an optically controlled open quantum system[1] CHING-KIT CHAN, L.J. SHAM, Department of Physics, Center for Advanced Nanoscience, University of California San Diego — A precise time-dependent optical control of an open quantum system relies on an accurate account of the quantum interference among the system, the photon control and the dissipative environment. In the spirit of the Keldysh non-equilibrium Green's function approach, we develop a diagrammatic technique to precisely calculate this quantum correlation for a fast multimode coherent photon control against slow relaxation, valid for both Markovian and non-Markovian systems. We demonstrate how this novel formalism can lead to a better accuracy than existing approximations of the master equation. We also describe extensions to cases with controls by photon state other than the coherent Glauber state.

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