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Non-Markovian Environmental Contributions to the Efficiency of Energy Transfer CESAR RODRIGUEZ-ROSARIO, PATRICK REBENTROST, ALAN ASPURU-GUZIK, Harvard University — Non-Markovian environmental effects have been experimentally observed in the Fenna-Matthews-Olson photosynthetic complex, but their role is not understood. We study the dynamical contribution of the environment to the efficiency of energy transfer by considering a non-Markovian environment and its interplay with the system Hamiltonian. We focus on the role of memory effects of different orders in time, and their competition that affect the energy transfer by defining the efficiency of the non-Markovian process. This efficiency measure has applications to the study of the quantum transport efficiency and engineering of light-harvesting devices.

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