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Engineering Efficient Exciton Energy Transfer in Artificial Arrays LESLIE VOGT, ALEJANDRO PERDOMO, SEMION SAIKIN, ALAN ASPURU-GUZIK, Harvard University — A critical component of light harvesting devices is efficient transfer of excitonic energy. Biological systems have optimized this process over time for the particular molecular components involved. Understanding this energy transfer in model arrays will allow us to engineer new materials for solar cell technology. In particular, we explore a perturbative approach to optimize both coherent and incoherent transport in small arrays. By following the evolving coherences and populations over time using a density matrix formalism, we gain an intuition about the importance of coherent processes in exciton transfer in natural and designed light harvesting systems.

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