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Fast and efficient excitation transfer across disordered molecular networks ANDREAS BUCHLEITNER, TORSTEN SCHOLAK, Physikalisches Institut, Albert-Ludwigs-Universität Freiburg, Hermann-Herder-Str. 3, D-79104 Freiburg, Germany, FERNANDO DE MELO, Instituut voor Theoretische Fysica, Katholieke Universiteit Leuven, Celestijnenlaan 200D, B-3001 Heverlee, Belgium, THOMAS WELLENS, Physikalisches Institut, Albert-Ludwigs-Universität Freiburg, Hermann-Herder-Str. 3, D-79104 Freiburg, Germany, FLORIAN MINTERT, Freiburg Institute of Advanced Studies, Albertstr. 18, 79014 Freiburg, Germany — In this talk, we will present our statistical investigations on coherent excitation transfer through finite-size disordered molecular networks. As we have found, there exist certain molecular conformations that exhibit fast and highly efficient transport – mediated by constructive quantum interference. We will discuss the properties of these optimal conformations which go along with the enhancement of efficiency. These insights may be relevant for explaining efficient energy transfer in the photosynthetic FMO complex.

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