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Dynamical coherence transfer in photoelectron diffraction in N_2 B. ZIMMERMANN, Louisiana State University, V. MCKOY, California Institute of Technology, B. LANGER, University of Würzburg, Max-Born-Institute, U. BECKER, Fritz-Haber-Institute of the Max-Planck-Society — Coherence is one of the key problems in quantum physics. It is the coherent or incoherent character of matter that separates the quantum from the classical world. However, coherence never disappears but is rather transferred into other systems, in most cases to a complex environment, where the system becomes a classical one. We will show that photoelectron diffraction in homonuclear molecules can be used to investigate this decoherence process. Furthermore, we will show that in this case, in contrast to other decoherence experiments, the coherence transfer is purely dynamic.

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