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Hierarchical equations of motion: A fundamental theory for quantum open systems[1] YIJING YAN, Hong Kong University of Science and Technology — As a powerful alternative to the influence functional path integral formalism, HEOM has been exploited in the study of various systems. In this talk, I will present some recent advancement on the HEOM-based nonlinear/nonequilibrium response theory and efficient implementation methods. Numerical demonstrations include coherent two-dimensional spectroscopy signals of light-harvesting model systems, and transport current noise spectrums through Anderson model quantum dots, operated in high-order co-tunneling regime.

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