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Abstract for an Invited Paper  
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**Dynamics of quantum impurities in many-body systems of ultracold atoms**

EUGENE DEMLER, Harvard University

Recent theoretical and experimental progress in the study of dynamics of quantum impurities in ensembles of ultracold atoms will be reviewed. Examples include RF spectroscopy of Bose and Fermi polarons, interferometric measurements of ultrafast dynamics of impurities in an atomic Fermi sea, exploring crossover from few- to many-body dynamics in Rydberg excitations. New directions including realizations of Kondo type models and Shiba states in Fermi superfluids will be discussed.