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Quantum theory of image potential and resonant tunneling in molecular junctions LYUDMYLA ADAMSKA, IVAN OLEYNIK, University of South Florida, MORTKO KOZHUSHNER, Institute of Chemical Physics, Russian Academy of Sciences, Russia — It has recently been realized that the image potential plays an important role in charge transport through single organic molecules. In most cases, the classical image potential -1/4z is used to calculate the modified energy spectrum of the charge carriers in the molecule. In this talk, we will present the theory of resonant tunneling transitions that include the quantum mechanical effects of dynamic image potential due to the polarization interaction of the tunneling charge carrier (electron or hole) with surface plasmons. The application of this theory to organic molecular junctions of experimental interest will be discussed.

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