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Transition from the Sequential to the Resonant Tunneling in a Dissipative Environment YURIY BOMZE, HENOK MEBRAHTU, IVAN BORZENETS, ALEX MAKAROVSKI, GLEB FINKELSTEIN, Duke University — We study the shape of the single-electron conductance peaks in a quantum dot coupled to a dissipative environment. In the regime of sequential tunneling through a single quantum level, the peak height increases as the temperature is lowered, although due to the dissipative environment it scales slower than the conventional $\sim 1/T$. As the temperature is lowered further into the resonant tunneling regime, the peak width approaches saturation, while the peak height starts to decrease. To our knowledge, the non-monotonic peak height dependence on temperature is experimentally observed for the first time. We associate this behavior with coherent tunneling through a single quantum level in the presence of dissipative environment.

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