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Investigation of chaos-assisted tunneling in a weakly coupled, double quantum dot DONG HO WU, Naval Research Laboratory, BERNARD MATIS, Naval Research Laboratory/ Temple University — It is known that chaos-assisted dynamical tunneling may occur in nonintegrable (chaotic) systems. In our previous experiments we measured the tunneling rate in a weakly coupled, 2D microwave double cavity. The results seemed to indicate that the presence of chaotic modes changes not only the dynamical tunneling rate but also the spatial tunneling rate, as the electromagnetic-field leakage (wave tunneling) rate between the weakly coupled, 2D double cavities increases significantly, if one of the cavities is nonintegrable. We have now investigated these phenomena with gate-defined quantum dots, fabricated on a GaAs\AlGaAs 2DEG substrate. The experiments were performed on quantum dots of various shapes. In this presentation we will discuss these recent results on tunneling rate and quantum conductance.

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