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Fano resonance in a system of coupled quantum point contacts LEV MUROKH, Queens College of CUNY, PAVEL IVANUSHKIN, JONATHAN BIRD — We examine theoretically the modification to the conductance of a quantum point contact (QPC) placed between two reservoirs, due to its coupling to a localized state. We derive a coupled set of equations of motion for the electron operators in the QPC, reservoirs, and the localized state and obtain an expression for the current through the QPC. This expression has clear Fano resonant form but, in the contrast to the standard case, both the resonant width Γ and the Fano parameter q are not constants but depend on the electron energies in the QPC and reservoirs. The total conductance is obtained after integrating over these energies. We study the dependencies of the QPC conductance on the temperature, source-drain voltage, the number of QPC subband involved in transport, and the strength of the QPC-localized state coupling. We compare our results with experimental data previously obtained by our group [1,2] in a system of *two* coupled QPCs when one of them is near pinch-off. Our research clearly supports the idea of localized state formation in QPCs. References [1] Y. Yoon *et al.*, Phys. Rev. Lett. **99**, 136805 (2007). [2] Y. Yoon *et al.*, Phys. Rev. B **79**, 121304(R) (2009).

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