

[Order](#)

Options for selected Articles

[View MyArticles](#)

[Permissions for Reuse](#) 

Choose an action

Go

Lifting of the Coulomb blockade of one-electron tunneling by quantum fluctuations

[L. I. Glazman](#) and [K. A. Matveev](#)

Institute of Problems in Technology of Microelectronics and Ultrapure Materials, Academy of Sciences of the USSR, Chernogolovka, Moscow Province; Institute of Solid State Physics, Academy of Sciences of the USSR, Chernogolovka, Moscow Province

An investigation is reported of the linear conductance of a system of two massive electrodes connected by point tunnel junctions to a small metallic granule. Quantum fluctuations of the granule charge lift the Coulomb blockade and give rise to a nonzero linear conductance G at any temperature T . A periodic dependence of G on the granule potential φ is determined at $T=0$. Coherent transmission of electrons across the granule has the effect that at $T=0$ the value of the conductance at the maxima of the $G(\varphi)$ dependence exceeds greatly its high-temperature value. Near the corresponding values of φ the amplitude of quantum fluctuations of the granule charge rises to a value of the order of the electron charge e .

PACS: 73.40.Gk

[Additional Information](#)