Abstract Submitted
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Electronic transport in aperiodic nanosheets, nanotubes and nanowires[1] VICENTA SANCHEZ, Departamento de Fisica, Facultad de Ciencias, Universidad Nacional Autonoma de Mexico., CHUMIN WANG, Instituto de Investigaciones en Materiales, Universidad Nacional Autonoma de Mexico. — Based on the Kubo-Greenwood formula, we study the electronic transport in cubically-structured quasiperiodic nanosheets, nanotubes and nanowires, where the nanotubes are made by connecting one of the boundaries of a square-lattice sheet and the nanowires have a cross section of 90×90 atoms. Calculations of electrical conductivity were performed by using a tight-binding Hamiltonian and by combining the convolution theorem with the real-space renormalization method [1]. The *dc* conductance shows quantized spectra, where nanotubes have steps with a double height in comparison with those of a nanosheet, both in contrast to an inhomogeneous step structure derived from nanowires. The *ac* conductivity shows a Drude and an oscillating behavior, when the electric field is along a periodic or quasiperiodic direction, respectively. Finally, the theoretical results are compared with experimental data.

[1] V. Sanchez and C. Wang, *Phys. Rev. B* **70**, 144207 (2004).

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