Electronic Transport in Aperiodic Solids

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Abstract: A review of various aperiodic material will be offered together with their transport properties. The non-commutative geometry approach will be described. A Kubo formula for the conductivity will be given within the framework of non-commutative geometry in the relaxation time approximation. A qualitative definition of transport exponents and its consequence upon the conductivity will be described and an anomalous Drude formula will follow. A discussion of the consequences for the Quantum hall Effect will be also presented.

If time allows, an N-body modeling of the Mott hoping transport will be presented as well to justify the accuracy of the Hall plateaux.