

Meeting: 1003, Atlanta, Georgia, SS 30A, AMS Special Session on Analysis Problems in Modern Physics, I

1003-47-1066 **Jean V. Bellissard*** (jeanbel@math.gatech.edu), Georgia Institute of Technology, School of Mathematics, Atlanta, GA 30332-0160. *Dissipative transport and Kubo's formula in Aperiodic Solids.*

Dissipative transport in solids can be described by a Markov semigroup of completely positive operators on the observable algebra of the charge carriers creation and annihilation operators. A model of generators of such semigroups, called the quantum jump model, will be presented. The linear response theory will be shown to provide the expression of transport coefficients through a Green-Kubo formula. This formula will be justified rigorously through the spectral property of the generator of the quantum jump model in various situations. The case of aperiodic solids, such as strongly disordered systems will be emphasized, in view of its relevance in the theory of the Quantum Hall effect. (Received October 03, 2004)