

# Mathematical Physics

## Memory Effects in Mesoscopic Systems

**Arne Jensen**

Aalborg University, Denmark

Consider a quantum dot coupled to two semi-infinite one-dimensional leads at thermal equilibrium. We turn on adiabatically a bias between the leads such that there exists exactly one discrete eigenvalue both at the beginning and at the end of the switching procedure. We investigate the dependence of some observables on the switching procedure. For example, the expectation on the final bound state strongly depends on the history of the switching procedure. On the other hand, the contribution to the final steady-state corresponding to the continuous spectrum has no memory, and only depends on the initial and final values of the bias.

Joint work with H. Cornean (Aalborg) and G. Nenciu (Bucharest).