

## **Existence and formula for NESS in the partition free approach**

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Let  $\Gamma^S$  be a bounded domain in  $\mathbb{R}^d$  to which one attaches two semi infinite cylindrical leads  $\Gamma^\pm$ . Quasi-free electrons confined in the configuration space  $\Gamma := \Gamma^S \cup \Gamma^- \cup \Gamma^+$  by a Dirichlet boundary condition, see a potential on  $\Gamma^S$  and no potential on the leads. Then one switches on adiabatically a potential bias on the leads. We shall show that at the end of the process this quantum system is in a Non Equilibrium Steady State, which could be slightly different from the one obtained by a sudden coupling of the leads to the sample  $\Gamma^S$ . This work has been done with H. Cornean and R. Purice and is the continuation and the conclusion of what I have presented at the Quantum Circle of the Doppler Institute in Prague, the 08th of January 2008.