

Final report on short visit supported by ESF,
“Arrays of Quantum Dots and Josephson Junctions (AQDJJ)”

Visitor: Dr. C. Flindt, Laboratory of Physics, Helsinki University of Technology, Finland

Hosts: Prof. M. Sassetti and Dr. A. Braggio, Department of Physics, University of Genova, Italy

Project title: Non-Markovian dynamics in the theory of Full Counting Statistics

Period: Monday October 22 to Friday October 26, 2007

Scientific report:

The group of Prof. M. Sassetti, and in particular Dr. A. Braggio, was visited during the week from Monday October 22 to Friday October 26, 2007. During the five days, the joint project on non-Markovian effects in the theory of full counting statistics was nearly finalized and a number of possible directions for future collaboration were identified. This was the main purpose of the visit. On Thursday October 25, 2007, Dr. C. Flindt, gave the talk “Counting statistics and applications to NEMS” at the seminar series of the host department.

Work carried out during the visit includes:

- 1) Discussions between Dr. C. Flindt and Dr. A. Braggio on rate functions in full counting statistics.
- 2) Discussions between Dr. C. Flindt, Dr. A. Braggio and Prof. M. Sassetti on the general theory of non-Markovian effects and full counting statistics.
- 3) Numerical implementation of bath-assisted tunnel rates for electron transport between two coupled quantum dots in series.
- 4) Development of a general theory for the finite frequency current noise of a non-Markovian transport system
- 5) Ideas for how to structure two forthcoming papers.
- 6) Development of ideas for further collaboration and future projects. These include: Generalizing MacDonalds formula to the skewness, applications of the developed formalism to new models.

Points 3) and 4) form the main scientific results obtained during the visit. Concerning 5), we are currently planning to submit one paper to Physical Review Letters, partially based on some of the results obtained during the visit, followed by an extended version, which will be submitted to Physical Review B.

Altogether, the visit can be considered very successful. We note that the visit would not have been possible without the support from ESF.