Research Networking Programmes

Short Visit Grant ☒ or Exchange Visit Grant ☐

(please tick the relevant box)

Scientific Report

The scientific report (WORD or PDF file – maximum of eight A4 pages) should be submitted online within one month of the event. It will be published on the ESF website.

Proposal Title: Einstein relation in Mott variable range hopping

Application Reference N°: 7020

1) Purpose of the visit

The purpose of the visit has been to work with Prof. N. Gantert and Dr. M. Salvi on a special random walk in a random environment, called Mott random walk, in the presence of an external field.

2) Description of the work carried out during the visit

We have considered the 1d Mott random walk on a simple point process under the restriction that consecutive points have a minimal distance d. We have taken jump rates modelling the variable range hopping in doped semiconductors under a weak uniform external field and we have studied the ballistic/subballistic behavior of the random walk

3) Description of the main results obtained

We have proved that, under suitable conditions on the simple point process, the random walk is ballistic and we have derived information concerning the environment viewed from the walker in the steady state. We are still working on the subbalistic regime.

4) Future collaboration with host institution (if applicable)

The project has not been completed yet and surely we will continue to collaborate on the subject.

5) **Projected publications / articles resulting or to result from the grant *(ESF must be acknowledged in publications resulting from the grantee's work in relation with the grant)***

We are preparing a preprint with title "Biased 1d Mott random walk"

6) Other comments (if any)