Physikalisches Institut
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Albert-Ludwigs-Universität Freiburg

QE

Quantum Efficiency Seminar und Colloquium

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Electron transport control: from small molecule to cellular length scales

ABSTRACT: Electron transfer reactions are ubiquitous in biology, chemistry and are central to molecular electronics and energy materials technologies. Biological electron transfer mechanisms range from tunnelling to thermally activated hopping. I give a review of recent trends in the theory and simulation of biomolecular electron transfer rates, mostly focusing on the role of electronic coupling fluctuations, and I compare biomolecular and small-molecule electron transfer mechanisms. I also discuss examples that relate to transport-pathway control over length scales that range from the small-molecule to the cellular level.

[1] I. A. Balabin, D.N. Beratan, and S.S. Skourtis*. The persistence of structure over fluctuations in biological electron transfer reactions.* Phys. Rev. Lett. 101, 158102 (2008)
[2] S. S. Skourtis, D. H. Waldeck, and D. N. Beratan. *Fluctuations in biological and bioinspired electron-transfer reactions.* Ann. Rev. Phys. Chem. Vol. 61 461-485 (2010)
[3] N.F. Polizzi, S. S. Skourtis and D. N. *Beratan Physical constraints on charge transport through bacterial nanowires.* Faraday Discuss. Vol.155, 43-62 (2012)

Date: **Tuesday, May 8th, 2012 15:45 pm**
Location: **Lecture Hall 1, Hermann-Herder-Str. 3, Freiburg**

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