

2 PhD and 1 postdoc positions within heat-management in microscopic systems

Fri, 2016-02-19 16:19 - [admin](#) [1] **At:** Aarhus University, Denmark

Deadline: 31 March, 2016

Location

Aarhus University Aarhus Denmark
56° 9' 46.5804" N, 10° 12' 14.1156" E
See map: [findvej.dk](#) [2], [Rejseplanen](#) [3]

2 PhD and 1 postdoc positions are available at the Department of Physics and Astronomy, Aarhus University, Denmark, within a newly granted project focused on heat-management in microscopic systems.

More specifically, the aim of the project is to investigate central questions like: what are the key quantities and mechanisms underlying energy storage and transport in finite or microscopic systems in different thermodynamic settings? When is it possible to have common classical and quantum mechanical formulations? What is the influence of size, disorder and defects in such systems?

The project is a combined experimental and theoretical endeavor. Experimentally, two complementary model systems will be considered, namely linear strings of laser-cooled and trapped ions and optomechanical arrays of nano-membranes. Both systems are highly tunable with respect to their mode spectra and coupling of individual elements, and they enable the fully controllable introduction of effects due to static disorder and defects. In addition, through the application of suitable optical fields, they can be brought in local contact with different effective heat baths, and efficient local state readout is possible. Finally, both systems can potentially be made operational in both the classical and quantum regimes. Theoretically, analytical tools will be developed for macroscopic observables in out-of-equilibrium microscopic systems, both in the classical and quantum regime. In particular, we want to derive the equations governing the time evolution of the relevant thermodynamic quantities that can then be applied to our model experimental systems.

For further information regarding the open positions, please contact the relevant senior investigator:

Prof. Michael Drewsen ([drewsen \[at\] phys \[dot\] au \[dot\] dk](mailto:drewsen@phys.au.dk)):

PhD position on experiments with linear strings of laser-cooled and trapped ions.

Ass. Prof. Aurelien Dantan ([dantan \[at\] phys \[dot\] au \[dot\] dk](mailto:dantan@phys.au.dk)):

PhD position on experiments with optomechanical arrays of nano-membranes.

Ass. Prof. Alberto Imparato ([imparato \[at\] phys \[dot\] au \[dot\] dk](mailto:imparato@phys.au.dk))

Postdoc position on the development of theoretical tools to assess macroscopic observables in out-of-equilibrium microscopic systems.

For information regarding other issues, please contact grant holder Prof. Michael Drewsen ([drewsen \[at\] phys \[dot\] au \[dot\] dk](mailto:drewsen@phys.au.dk)).

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