

Fizički odsjek Prirodoslovno matematičkog fakulteta Sveučilišta u Zagrebu  
Bijenička c. 32, HR-10000 Zagreb

---

## Seminar Fizičkog odsjeka i ZCI QuantiXLie

---

Vrijeme (s.t.)

Mjesto

utorak 11. 07. 2017., 14:15 h

predavaonica F201, II.kat

# Current statistics of open parity-symmetric spin systems

Berislav Buča

Department of Medical Physics and Biophysics, University of Split School of Medicine,  
Croatia

In the introduction we discuss non-equilibrium quantum physics of systems weakly coupled to their environments, and discuss the Lindblad equation. We then study the full current statistics for interacting quantum many-body spin systems weakly coupled to the environment. In the leading order in the system-bath coupling we derive exact spin current statistics for a large class of parity symmetric spin-1/2 systems driven by one or more pairs of Markovian baths with local Lindblad coupling operators. Interestingly, in this class of systems the leading order current statistics are universal in the leading order, and do not depend on details of the system. Furthermore, in the specific cases of anisotropic Heisenberg (XXZ) spin 1/2 chain and the Hubbard model we derive explicitly the next-to-leading order to the current statistics using Bethe ansatz techniques.

References:

M. Esposito, U. Harbola, and S. Mukamel, *Rev. Mod. Phys.* **81** 1665 (2009).

B. Buča and T. Prosen, *Phys. Rev. Lett.* **112** 067201(2014).

B. Buča and T. Prosen, *Phys. Rev. E* **95** 052141 (2017).

Voditelji seminara FO

Damir Pajić i Ivica Smolić