



## KONWERSATORIUM INSTYTUTU FIZYKI UMCS

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### *„Probing hydrodynamics and thermal fluctuations on mesoscopic scales”*

The properties and dynamics of small systems on short timescales exhibit many peculiar properties. Since in soft-matter systems with sizes on the order of micrometres the typical interaction energies are of the order of the thermal activation energy  $k_{\text{B}}T$ , dominant contributions to their dynamics stem from thermal fluctuations and hydrodynamic interactions.

In this talk, I will discuss generic properties of the dynamics of mesoscale systems. In particular, I will discuss the relevance of hydrodynamic correlations for the fluctuation-induced violations of the Second Law of thermodynamics in small systems at short times [1], as well as the determining roles of sound [2] and hydrodynamic vorticity [3] in single-particle experiments.

- [1] M. Belushkin, R. Livi, G. Foffi, Phys. Rev. Lett. 106, 210601 (2011)
- [2] M. Belushkin, R. G. Winkler, G. Foffi, J. Phys. Chem. B (in print, 2011)
- [3] T. Franosch, M. Grimm, M. Belushkin, F. Mor, G. Foffi, L. Forro, S. Jeney, Nature (in print, 2011).

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Uprzejmie zapraszam wszystkich pracowników, doktorantów i studentów Instytutu Fizyki.

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