

## Contribution submission to the conference Dresden 2011

**Fluctuation relations for anomalous dynamics** — ALEKSEI V. CHECHKIN<sup>1</sup> and RAINER KLAGES<sup>2</sup> — <sup>1</sup>Institute for Theoretical Physics NSC KIPT, Kharkov, Ukraine — <sup>2</sup>Queen Mary University of London, School of Mathematical Sciences, London, UK

We consider work fluctuation relations (FRs) for generic types of dynamics generating anomalous diffusion: Levy flights, long-correlated Gaussian processes and time-fractional kinetics. By combining Langevin and kinetic approaches we calculate the probability distributions of mechanical and thermodynamical work in two paradigmatic nonequilibrium situations, respectively: a particle subject to a constant force and a particle in a harmonic potential dragged by a constant force. We check the transient FR for two models exhibiting superdiffusion, where a fluctuation-dissipation relation does not exist, and for two other models displaying subdiffusion, where there is a fluctuation-dissipation relation. In the two former cases the conventional transient FR is not recovered, whereas in the latter two it holds either exactly or in the long-time limit [1].

[1] A.V.Chechkin, R.Klages, J.Stat.Mech. L03002 (2009)

**Part:** DY  
**Type:** Vortrag;Talk  
**Topic:** Anomale Diffusion;Anomalous diffusion  
**Email:** r.klages@qmul.ac.uk