CeNT CENTRE OF NEW TECHNOLOGIES

UNIVERSITY OF WARSAW

invites to a seminar by

Dr Maciej Długosz
Centre of New Technologies

Effects of hydrodynamic interactions on the apparent 1D mobility of proteins on DNA.

30th of November 2017 at 12 p.m.

Venue: Centre of New Technologies, Banacha 2C,
Lecture Hall 0142 (Ground floor)

Host: Prof. Joanna Kargul

Molecules translating and rotating in a viscous fluid generate a flow field that couples their motions. This coupling is the origin of so-called hydrodynamic interactions. The general role of hydrodynamic interactions in modulating the dynamic properties of biological systems is widely recognized, and their possible effects on protein–protein or protein–ligand association, protein folding and unfolding, formation of lipid bilayers, and diffusional transport in cytosol-like environments are a subject of different theoretical/computational studies. However, the main problem of such studies still remains the proper account of hydrodynamic interactions in complex systems consisting of biomolecules with diverse sizes and shapes. This is due to the fact, that hydrodynamic interactions have many-body character and depend in a complicated fashion on positions and orientations of all molecules in the considered system. During my lecture I will firstly describe a computational method that can be applied to evaluate hydrodynamic interactions in systems consisting of arbitrarily-shaped biomolecules and then present numerical results regarding the role of hydrodynamic interactions in rotation-coupled sliding of proteins on DNA.