



INSTITUT ZA FIZIKU

ZAJEDNIČKI SEMINAR IF i HBD

9. prosinca 2016. (petak) u 11:00 sati (točno)

Institut za fiziku, Bijenička cesta 46, Predavaonica III krilo

Artem Badasyan

University of Nova Gorica, Slovenia

Physics behind the Conformational Transitions in Biopolymers. Demystification of DNA melting and Protein Folding

Biophysics is the area of research, devoted to the studies of physical problems related to living systems. Animal cell is the smallest unit of an organism and mainly contains water solutions of structurally inhomogeneous polymers of biological origin: polypeptides (proteins) and polynucleotides (DNA, RNA). Statistical physics of macromolecules allows to describe the conformations of both synthetic and bio-polymers and constitutes the basis of Biophysics. During the talk I will report on the biophysical problems I have solved with numerical simulations (Langevin-based Molecular Dynamics of Go-like protein folding model and Monte Carlo with Wang-Landau sampling) and analytical studies of spin models (formula evaluation by hand, enforced with computer algebra systems). The direct connections with the theory of phase transitions, algebra of non-commutative operators and decorated spin models will be elucidated.

* * * E-mail: abadasyan@googlemail.com

Prof. Badasyan works in the field of statistical physics of macromolecules, mainly on conformational transitions in (bio)polymers. He applies both simulations (MD and MC) and analytical spin models to polypeptides and polynucleotides. He has PhD (2005) from Yerevan State University, Armenia. Between 2005 and 2012 he was a postdoc at University of Toronto, Canada, at Università Ca'Fosca, Italy and at Jožef Stefan Institute, Ljubljana, Slovenia. From 2013 he took an Assistant Professor position at the University of Nova Gorica, Slovenia.