

青山学院大学 物理・数理学科 コロキウム

2019年度 第4回

下記の通りコロキウムを企画致しました。学生や分野の違う方にもわかるレベルから始めて下さるようお願いしてあります。どなた様もご自由に是非ご聴講ください(事前参加登録なし)。

(世話人: 田中 周太、連絡先: sjtanaka@phys.aoyama.ac.jp)

講演者 Enrico Carlon 氏 (Soft Matter and Biophysics, KU Leuven)

日時 7月4日(木) 午後4時45分から

場所 青山学院大学 理工学部 L棟6階 L603室

講演題目 「The influence of twist-bend coupling on the mechanical properties of DNA」

The Twistable Wormlike chain (TWLC) is considered as the standard model of DNA mechanics. This model is characterized by uncoupled bending and torsional deformations and captures some of the essential features of DNA elasticity as observed in single molecule experiments. The TWLC is however incomplete as it neglects an important interaction term which couples twist and bending degrees of freedom. Such twist-bend coupling follows from simple symmetry arguments about the structure of the double helix. In this talk we will review some recent works analyzing the influence of twist-bend coupling on the mechanics and statistical mechanics of DNA, in particular two cases will be discussed in detail: (1) the structure of nucleosomal DNA (which is wrapped around histone proteins) and (2) DNA torsional elasticity as measured from Magnetic Tweezers experiments. We will show that twist-bend coupling offer a very natural explanation of several experimental results and discuss some open issues.
