

Abstract

In the past decade there has been an upsurge of new experimental techniques that have allowed for probing the equilibrium and out-of-equilibrium response of one molecule at a time. These investigations have provided an unprecedented and detailed insight into the behaviour of molecules essential for life. At the same time they have pushed the development of novel theoretical frameworks for characterizing the statistical mechanical behaviour of these molecules. In this course we shall start by reviewing the salient single-molecule experimental techniques and next cover the state-of-the-art theoretical approaches and models that are used in biomolecular contexts. Part of the lectures will be based on "live" numerical demonstrations. The source code of the numerical examples will be provided.