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Single-molecule force spectroscopy with optical tweezers

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Optical Tweezers exploit light to manipulate objects at the micro- and nanoscale, demonstrating to be a powerful tool for investigating the biological world. Force spectroscopy measurements with optical tweezers allow the application of controlled mechanical stimuli and displacements on individual molecules of DNA, RNA and proteins, while monitoring the time evolution of the system as it undergoes biochemical reactions. In this way, it is possible to derive information on the elastic and kinetic properties of the molecule, characterizing its molecular pathways and its free energy landscape. In this talk, the working principles of optical trapping and its application to single-molecule experiments will be presented; the study we are carrying out with optical tweezers on the Thymidylate Synthase consensus RNA will be also discussed.

Presenter: Dr ZALTRON, Annamaria (Department of Physics and Astronomy)

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