Seminários de Física

Centro de Física da Universidade do Minho

Quarta-feira, 14 de junho de 2023, às 14:30h
Anfiteatro da Física, Escola de Ciências, Gualtar

Nanoarchitectures, Plasmonic Waveguides and Molecular Biophysics Tools Made with DNA

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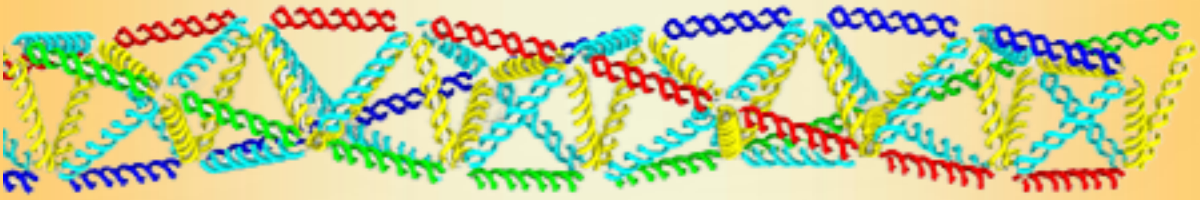

DNA is a unique polymer. It is the information storage molecule of all known life forms, and can be used to build up almost arbitrary structures and nanoparticle patterns from DNA. These structures can site-specifically be functionalized with a large variety of inorganic nanoparticles, small molecules or large biomolecules such as proteins and antibodies. Our group is leveraging this programmability to engineer nanoarchitectures and tools for applications in Biophysics, Molecular Biology, Nanophotonics and Nanomedicine.

In this seminar, I will describe the construction of material-efficient triangulated wireframe structures (see image) and shape changes induced by polymerase-assisted gaps of single-stranded domains. Attaching gold nanoparticles with high precision allows to make multi-particle plasmonic waveguides. Finally, I will demonstrate how DNA-lipid nanodiscs might become powerful tools for the structure determination of membrane proteins by single-particle cryo Electron microscopy.