

Quantum nanophotonics: using nanostructures to manipulate photons

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With technological advances allowing the fabrication of smaller and smaller components for electronic and optical processing it is important that we understand and embrace the possibilities of combining the use of quantum technologies in the nanosciences. In this talk I will present three recent results of my research group which showcase the possibilities of applying the concepts of Quantum Optics and Quantum Information in Nanophotonics, with particular emphasis in sensing and metrology applications. In particular I will show our recent efforts in using quantum metrology to perform measurements of the optical rotatory dispersion of chiral molecules, how photonic quantum states can be engineered to interact with structures smaller than the wavelength of light and to control the state of levitated nanoparticles.

References

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