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**Dipartimento
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IL DIPARTIMENTO DI SCIENZE MOLECOLARI E NANOSISTEMI

ORGANIZZA UNA CONFERENZA DAL TITOLO:

Probing and controlling magnetism with light

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Abstract

The interaction of light and matter is usually discussed only in terms of coupling between the photon electric field and the electronic charge in a material, neglecting the role of spins. While this is a good approximation to describe many important light-matter phenomena, it is not the full picture. Fascinating and intriguing effects appear when magnetism is also introduced, as Faraday began to discover in 1845.

In this talk, I will discuss the interaction of magnetism and "light" in its broadest sense, from microwave to x-ray radiation, and give an overview of some of the exciting contemporary research avenues where photons of different frequencies are used to probe or to control magnetic states of matter: from the imaging of spin currents and spin dynamics at the nanoscale [1] using time-resolved x-ray magnetic microscopy [2], to the manipulation of spins at femtosecond time scales using visible [3] and THz radiation [4].

[1] R. Kukreja et al, Phys. Rev. Lett. 115, 096601 (2015). S. Bonetti et al, Nature Communications 6:8889 (2015).
[2] S. Bonetti, J. Phys.: Condensed Matter 29, 133004 (2017)
[3] C. D. Stanciu, Phys. Rev. Lett. 99, 047601 (2007)
[4] S. Bonetti et al, Phys. Rev. Lett. 117, 087205 (2016)

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