

Università degli Studi di Trieste

Dipartimento di Fisica

Seminario

Fabio Novelli, Alumnus

Swinburne University of Technology, Melbourne (AU)
Royal Melbourne Institute of Technology, Melbourne (AU)

Tuesday, October 18, 4.00 PM - Lecture Room A, F Building, Dip. di Fisica – via Valerio 2

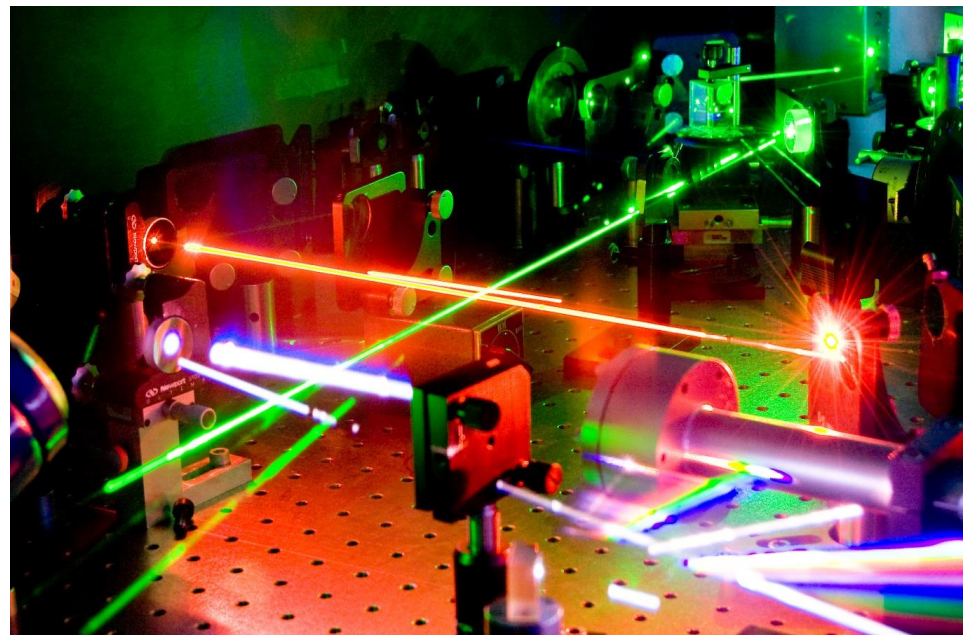
Non-linear optical responses of complex solid state and biological systems.



The optical properties of complex materials are intimately related to intriguing electronic phenomena, from charge transport in natural photosynthetic matter to superconducting phases of solid state materials. Yet the equilibrium optical responses of these systems result from a multitude of different interactions acting on similar energy scales. Non-linear ultra-fast spectroscopy allows to disentangle complex electronic features with high resolution on both temporal and frequency scales. Here we introduce some basic concepts of non-linear optical spectroscopy in the visible and terahertz ranges and show how these techniques can be used to gain insight about different physicochemical processes.

While multidimensional ultra-

fast spectroscopy at visible wavelengths can be used to study low-energy coherences in both high-temperature superconductors and natural photosynthetic molecules, intense single-cycle terahertz fields allow to map changes to the water network driven by specific protein rearrangements. The rapid progress of these techniques might open the door to the full quantum control of matter with femtosecond precision.



Organizzazione a cura di: D. Fausti, E. Vesselli

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Everyone interested in the topic is welcome to attend

Informazioni: seminari@ts.infn.it