

26. April 2013 - 14:00
CFEL Seminar room I-III (DESY Bldg. 99)

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Light Touch

Light fascinates us. At some level light is a mystery. It continues to illuminate us. In physics it illuminated the path to discovery of special theory of relativity, quantum mechanics, quantum electrodynamics and so on. On the experimental front, we have advanced from incandescent lamps to laser, a coherent state of photon quanta. Physicists use this quantum coherence in a variety of ways, including creating quantum entanglement among photons in cavities and ions in traps. Can laser use its quantum coherence and help organize a piece of certain normal metal into a 'quantum matter' such as a room temperature superconductor? This is achieved in a remarkable recent experimental result [1] from the Hamburg group and collaborators. I interpret the result as an 'effective quantum coherence transfer' process from laser using a novel 'superradiance' phenomenon. I will introduce a key participant, 'Anderson atom' in momentum space, as atoms of superradiance and provide a pedagogic introduction to 'Superradiant Superconductivity' [2].

[1] S. Kaiser et al., Transient Superconductivity above T_c in optically modulated YBCO, arXiv:1205.4661

[2] G. Baskaran, Superradiant Superconductivity, arXiv: 1211.4567



„Creation of Adam“

Michelangelo

Host: Andrea Cavalleri, MPD-CFEL