

Quantum memories, a light-matter interface

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Rare earth ions doped into inorganic crystals can remain in quantum superposition states during several hours and it is possible to entangle ions in spatially remote crystals with each other. This talk will review how rare earth ion doped crystals can be used in quantum tasks and in particular as quantum memories. If time permits the talk may also touch on slow light effects in these materials. The talk will be aimed to a general physics audience with interest in coherent interactions between light and matter.