

The Nobel prize in Physics 2012

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ABSTRACT:

This year's Nobel prize honored, through the work of Haroche and Wineland, the physics of light-matter interaction at the ultimate quantum limit of one or a few quanta of excitation. This talk will present an overview of this field (quantum optics and, more precisely, cavity QED). While an emphasis will be given to some of the spectacular achievements of the 2012 laureates, particularly those of Serge Haroche, we will also discuss—beyond the EPR paradox, Schrödinger's cats, decoherence, sculpting of quantum states and the quantum Zeno effect—some of our own results that, in a different platform, belong to the same thematic: strong-coupling with quantum dots in microcavities, Mollow triplets in a fully quantized optical fields and frequency-resolved photon correlations.