

SINGLE ATOM EXPERIMENTS AND THE TEST OF QUANTUM PHYSICS

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In recent years quite a few experiments on the interaction of radiation with single atoms in cavities and traps have been performed emphasising the quantum features of the interaction. A brief review of recent experiments of this type will be given. Since traps allow to probe the same atom for a long time and in addition to study the detailed time behaviour of the radiation-atom interaction e.g. by observing quantum jumps, it is promising to combine optical cavities with high quality factors with the known trapping techniques. It has been shown that a single atom laser with interesting new features can be realised. In the talk special emphasis will be given to the application of trapped ions for quantum information processing and to frequency standards.

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