

Preparation of Multicomponent Schrödinger Cat States Through Resonant Atom-Field Interaction

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Abstract: A simple method is presented for generating multicomponent Schrödinger cat states through resonant atom-field interactions. In the scheme n two-level atoms, initially in ground states, are sent through a resonant cavity filled with a strong coherent field sequentially. Then state-selective measurements are performed on the atoms. The detections of the atoms in ground states collapse the cavity field onto a superposition of 2^n coherent states. This is the first way for producing superpositions of many coherent states through resonant atom-field interaction.

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Key words: Schrödinger cat state, resonant atom-field interaction, two-level atom

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