

## Chaotic Behavior in the Raman Interaction of a Trapped Ultracold Ion with Two Traveling Wave Lasers

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**Abstract:** By means of the Bloch-Maxwell equation, the Raman interaction of a trapped ultracold ion with two traveling wave lasers is treated semiclassically. As the model works without limitation of the Lamb-Dicke limit and the weak excitation regime, we study chaotic behavior of the system in the wide range of the parameters. It is shown that the chaotic behavior is more and more pronounced with the increase of the Lamb-Dicke parameter and Rabi frequency, and can be exhibited experimentally by using quantum jump technique.

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Key words: chaos, ultracold ion, Raman interaction

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