

Nonlinear BEC Dynamics Induced By Harmonic Modulation Of Atomic s -wave Scattering Length

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Abstract. In the recent experiment [1], a Bose-Einstein condensate of ^7Li has been excited by a harmonic modulation of the atomic s -wave scattering length via Feshbach resonance. Combining an analytical perturbative approach with numerical simulations we analyze the resulting nonlinear dynamics of the system on the mean-field Gross-Pitaevskii level. Related excitation spectra are presented and prominent nonlinear features are found: mode coupling, higher harmonics generation and significant shifts in the frequencies of collective modes. We indicate how nonlinear dynamical features could be clearly observed in a future experiment and compared to our theoretical results.

REFERENCES

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