

# Search of Chaos in Bose-Einstein Condensate in Tilted Bichromatic Potential

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## Abstract:

Many theoretical studies have been performed on nonlinear properties in Bose-Einstein Condensate (BEC) for different optical lattice potential [1,2,3]. Very recently, super lattice potential has been fulfilled chaotic behavior in BEC [4,5]. In this study, we present the dynamics of 1D Gross-Pitaevskii equation (GPE) for tilted bichromatic potential ( $V(x) = V_1 \cos^2(w_1 x) + V_2 \cos^2(w_2 x) + Fx$ ). We show that density of flow ( $J$ ) affects behavior of BEC for different potential depths. In addition, for regular case with a number of density of flow under the bichromatic potential exhibits similar behavior with Wannier Stark lattice potential [2]. Finally we investigate the existence of chaos with different parameter values for our system.

## References:

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