

Abstract Submitted
for the DAMOP15 Meeting of
The American Physical Society

Onset of dissipation of BEC in shaking 2D Anti-dot optical lattices TOSHIYA KINOSHITA, KAZUYA YAMASHITA, KOUHEI HANASAKI, AKIHIRO ANDO, HIROSHI KANEMITSU, RYOSUKE GOTO, Graduate School of Human and Environmental Studies, Kyoto University — We present a series of experiments with ^{87}Rb BEC loaded into 2D anti-dot optical lattices. This lattice has periodically arranged potential hills and energy minima which are connected to be mesh-like structure. BEC in the lattice is considered to be well described as BEC with many holes when the barrier is slightly higher than chemical potential. We study onsets of dissipation of BEC by sinusoidally shaking anti-dot lattices. The dissipation is monitored by condensed fractions after thermalization. Below $0.5E_{\text{rec}}$ barrier, we found a critical velocity v_c , close to 0.5 recoil velocity. v_c decrease down to $\sim 1\text{mm/s}$ at $2E_{\text{rec}}$ and stay constant for much higher hills. The effects of dissipation also appear in interference patterns just after shaking. We present the details of our experiments.

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Date submitted: 30 Jan 2015

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