Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

DMRG study of spin-imbalanced fermionic cold atoms trapped on optical ladders — evolution of spin-aligned domains MASAHIKO OKUMURA, SUSUMU YAMADA, MASAHIKO MACHIDA, CCSE, Japan Atomic Energy Agency and CREST(JST), HIDEO AOKI, Department of Physics, University of Tokyo — DMRG is used to study spin-imbalanced fermionic cold atoms that reside on a two-leg optical ladder and trapped to a finite region to explore the spin structure. We find that the ground state comprises phase-separated regions that include fully spin-polarized, partially polarized, and non-polarized domains for strong on-site repulsions. We determine the conditions for realizing large itinerant ferromagnetic (fully polarized metallic) regions.

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Date submitted: 19 Nov 2009 Electronic form version 1.4