Abstract Submitted
for the DAMOP17 Meeting of
The American Physical Society

Coarsening in the one-dimensional spin-1 spinor Bose-Hubbard model KAZUYA FUJIMOTO, RYUSUKE HAMAZAKI, University of Tokyo, MASAHITO UEDA, University of Tokyo, RIKEN CEMS — A Spinor gas has a rich variety of phases, being a suitable system to investigate coarsening in an isolated quantum system. Most recent works for the coarsening in ultra-clod atomic gases focus on two-dimensional systems and find domain-growth laws characteristic of the classical binary liquid [1,2]. Under such a background, we theoretically study the coarsening in the one-dimensional spin-1 spinor Bose-Hubbard model. In terms of the coarsening, this system is essentially different from the previous ones because, in the one-dimensional system, the domain wall does not have the curvature and cannot move by itself. This leads to an expectation that the one-dimensional coarsening belongs to a universality class different from the binary liquid. To reveal this class, we have focused on a deep superfluid regime in our model, and analytically shown that the domain-growth law is characterized by the exponential integral not seen in the binary liquid. Furthermore, we have numerically confirmed this growth law by using the truncated Wigner approximation.

1 K. Kudo and Y. Kawaguchi, Phys. Rev. A **88**, 013630 (2013).
2 L. Williamson and P.B. Blakie, Phys. Rev. Lett. **116**, 025301 (2016).

Kazuya Fujimoto
University of Tokyo

Date submitted: 20 Jan 2017 Electronic form version 1.4