

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

"Three applications of a double commutator"

Haruki Watanabe, University of Tokyo

Abstract: Back in 1988, Horsch and von der Linden introduced a useful trick making use of a simple double commutator [1]. Using this trick, they (partially) clarified the low-energy spectrum in symmetry broken phases, which we nowadays call the Anderson tower of states. In this talk, I will explain two new applications of this trick. The first one is to show the absence of quantum time crystals in the ground state (as originally introduced by Wilczek) [2]. The second one is to clarify the relationship between the static charge susceptibility and the excitation gap [3].

[1] P. Horsch and W. von der Linden, Z. Phys. B. 72, 181 (1988).

[2] HW and M. Oshikawa, Phys. Rev. Lett. 114, 251603 (2015).

[3] HW, to appear in Phys. Rev. Lett (2017), arXiv:1609.09543.

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