

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Many-body delocalization with random vector potentials¹ CHEN CHENG, RUBEM MONDAINI, Beijing Computational Science Research Center — In this talk we present the ergodic properties of excited states in a model of interacting fermions in quasi-one dimensional chains subjected to a random vector potential. In the non-interacting limit, we show that arbitrarily small values of this complex off-diagonal disorder triggers localization for the whole spectrum; the divergence of the localization length in the single particle basis is characterized by a critical exponent ν which depends on the energy density being investigated. However, when short-ranged interactions are included, the localization is lost and the system is ergodic regardless of the magnitude of disorder in finite chains. Our numerical results suggest a delocalization scheme for arbitrary small values of interactions. This finding indicates that the standard scenario of the many-body localization cannot be obtained in a model with random gauge fields.

Reference [1] C. Cheng, and R. Mondaini, *Many-body delocalization with random vector potentials*, arXiv:1508.06992.

¹This research is financially supported by the National Natural Science Foundation of China (NSFC) (Grant Nos. U1530401 and 11674021). RM also acknowledges support from NSFC (Grant No. 11650110441).

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Date submitted: 11 Nov 2016

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