

## Solutions Homework Akhmerov

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The assignment is essentially a paper review, and therefore should be evaluated like one. There is no correct answer, however below are some recommendations for the grading.

+ The minimal answer about the relation between the lecture and the papers is "both are about Majoranas", however the students should be able to identify more similarities, e.g. "identical Hamiltonians", "topological invariant is used", etc.

+ A possible (but not necessarily the only correct) answer for the question about what is new in each paper, compared to the lectures can be:

\* <http://arxiv.org/abs/1111.6600> — the role of disorder and avoiding it by tuning the Hamiltonian

\* <http://arxiv.org/abs/1008.0629> — generalization of the theory of Majoranas to several orbital bands

\* <http://arxiv.org/abs/1310.4525> — pairs of Majoranas protected by time reversal symmetry

\* <http://arxiv.org/abs/1310.4525> — Majoranas in a different system (quantum spin Hall insulator), also telegraph noise in a Josephson junction with Majoranas.

+ The strong and weak points of the papers are largely up to the students, and they should be graded by argumentation quality.

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