Stability of the topological Kondo insulating phase in one dimension

I. Hagymási[1] and Ö. Legeza[1]

[1] *Institute for Solid State Physics and Optics, MTA-WRCP, P.O. Box 49, H-1525 Budapest, Hungary*

We investigate the ground state and the low-lying spectrum of a p-wave Kondo-Heisenberg model introduced by Alexandrov and Coleman [1] with an Ising-type anisotropy in the Kondo interaction and correlated conduction electrons. Our aim is to understand how they affect the stability of the symmetry-protected topological state obtained in the SU(2) symmetric case without the Hubbard interaction. By applying the density-matrix renormalization group algorithm and calculating the entanglement entropy we show that in the anisotropic case a phase transition occurs and a Néel state emerges above a critical value of the Coulomb interaction. These findings are also corroborated by the examination of the entanglement spectrum and the spin profile of the system which clarify the structure of each phase [2].

References:

[1] V. Alexandrov and P. Coleman Phys. Rev. B **90**, 115147 (2014).
[2] I. Hagymási and Ö. Legeza Phys. Rev. B **93**, 165104 (2016).