

Abstract Submitted
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Interacting antikinks on a diamondback ladder II KIRILL SHTEN-
GEL, MAYRA TOVAR, UC Riverside — Recently introduced “antikinks” are spin
 $1/2$ excitations of the Heisenberg antiferromagnet on a sawtooth lattice [1]. The idea
is that they mimic spinons of the kagome antiferromagnet. Antikinks are triangles of
spins which are not in their ground state. Treating antikinks as free non-interacting
particles (a good approximation for the sawtooth chain), their energy was found to
be substantially reduced by delocalization [1]. We study antikinks on a “diamond-
back” ladder in which all spins are shared between two triangles. Consequently, in
a uniform case the concentration of antikinks becomes $1/4$ and they strongly inter-
act, making such a model a much better approximation for the kagome case. We
treat these effects perturbatively by allowing different Heisenberg couplings on the
up- and downward oriented triangles, the two limiting cases being the sawtooth and
uniform diamondback ladder. We find a non-monotonic, power-law decay of induced
interactions between the antikinks with their separation. The consequences of these
interactions will be discussed in this talk.

[1] Z. Hao and O. Tchernyshyov, Phys. Rev. Lett. **103**, 187203 (2009)

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