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Houssam Abdul-Rahman, Marius Lemm, Angelo Lucia, Bruno Nachtergaele and Amanda Young* (young@ma.tum.de). *A gapped family of two-dimensional AKLT models.*

The one-dimensional AKLT spin chain is the prototypical example of a frustration-free quantum spin system with a spectral gap above its ground state. Affleck, Kennedy, Lieb, and Tasaki conjectured that the two-dimensional version of their model on the hexagonal lattice also exhibits a spectral gap. We introduce a family of variants of the hexagonal AKLT model, defined by decorating each edge of the lattice with an AKLT chain of length n , and prove that these decorated models are gapped for all $n \geq 3$. (Received September 15, 2019)