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Multimagnon bound states in a 2D system of coupled frustrated ferromagnetic chains EDWARD PARKER, Univ of California - Santa Barbara , LEON BALENTS, Kavli Institute for Theoretical Physics, UCSB — In strong applied fields, ferromagnetic spin chains with a frustrating antiferromagnetic next-nearest-neighbor interaction are known to have exotic "spin-nematic" ground states described by a Luttinger liquid of Bose-condensed *bound states* of two or more magnons. These ground states have nontrivial composite order parameters, reflecting the fact that the $U(1)$ spin symmetry about the applied field is not broken all the way down to the identity. We numerically study the stability of these magnon bound states when these chains are coupled into a two-dimensional kagomé lattice (resulting in a spatially anisotropic Hamiltonian that may describe the material $Cu_3V_2O_7(OH)_2 \cdot 2H_2O$ (volborthite)). We find that even very weak (although nonzero) couplings cause the magnon pairs to unbind, suggesting that this exotic magnon pair-condensation may be difficult to realize in higher than one dimension.

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