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**Valence-bond crystal in the extended Kagomé spin-1/2 quantum Heisenberg antiferromagnet: A variational Monte Carlo approach** FEDERICO BECCA, CNR, Istituto Officina dei Materiali and SISSA, Trieste, YASIR IQBAL, DIDIER POILBLANC, Laboratoire de Physique Theorique, Universite' de Toulouse — The highly-frustrated spin-1/2 quantum Heisenberg model with both nearest ( $J_1$ ) and next-nearest ( $J_2$ ) neighbor exchange interactions is revisited by using an extended variational space of projected wave functions that are optimized with state-of-the-art methods. Competition between modulated valence-bond crystals (VBC) proposed in the literature and the Dirac spin liquid (DSL) is investigated. We find that the addition of a *small* ferromagnetic next-nearest-neighbor exchange coupling  $|J_2| > 0.09J_1$  leads to stabilization of a 36-site unit cell VBC, although the DSL remains a local minimum of the variational parameter landscape. This implies that the VBC is not trivially connected to the DSL: instead it possesses a non-trivial flux pattern and large dimerization.

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