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A Spin-1 Kagomé Heisenberg Antiferromagnet ALI BEYRAMZADEH MOGHADAM, KIRILL SHTENGEL, University of California - Riverside, GIL REFAEL, California Institute of Technology — We study a spin-1 Heisenberg antiferromagnet on a $2D$ kagomé lattice by projecting the Heisenberg Hamiltonian onto a restricted subspace of the full Hilbert space. This subspace consist of AKLT-like valence bound states described by closed loops. While not orthogonal, these singlet states are linearly independent; we derive the overlap between them and show that it is non-local and depends on the topology of nested loops. All of these states are characterized by the exponential decay of spin-spin correlations. Within this subspace, we identify lowest energy states which can be thought of as variational candidates for the ground states of the spin-1 kagomé Heisenberg and compare them with previous numerical studies.

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