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Spin Jams, frustration, and exotic entropy scaling ISRAEL KLICH, SEUNG-HUN LEE, Univ of Virginia, KAZUKI IIDA, JPARC — When spins are regularly arranged in a triangular fashion, the spins may not satisfy simultaneously their antiferromagnetic interactions with their neighbors. This phenomenon, called frustration, usually leads to a large set of ground states and to exotic states such as spin ice and spin liquid. Here we report a novel situation: a system governed by simple Heisenberg interactions that freezes into a glass like state induced by quantum fluctuations, in contrast to the usual mechanisms for classical spin-glass which rely on the presence of disorder. At the heart of the effect is an unusual scaling of the number of local minima, with a scaling extensive in the boundary length rather than the volume, which we describe in terms of a new tiling problem.

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