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Spin dynamics in the bilinear-biquadratic spin-1 Heisenberg model on the triangular lattice STEFAN WESSEL, ANNIKA VOELL, RWTH Aachen University — We study thermodynamic properties as well as the dynamical spin and quadrupolar structure factors of the SU(2)-symmetric spin-1 Heisenberg model with bilinear-biquadratic exchange interactions on the triangular lattice. Based on a sign-problem-free quantum Monte Carlo approach, we access both the ferromagnetic and the ferroquadrupolar ordered, spin nematic phase as well as the SU(3)-symmetric point that separates these phases. Signatures of Goldstone soft-modes in the dynamical spin and the quadrupolar structure factors are identified, and the properties of the low-energy excitations are compared to the thermodynamic behavior observed at finite temperatures as well as to Schwinger-boson flavor-wave theory.

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