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**Quantum Spin Fluctuations for an Incommensurate Spiral** RANDY FISHMAN, Oak Ridge National Laboratory, Oak Ridge, TN 37831 USA — Quantum spin fluctuations are investigated for the incommensurate spiral state of a geometrically-frustrated triangular-lattice antiferromagnet. With increasing anisotropy, the average spin amplitude becomes larger but the spiral becomes more distorted. Quantum fluctuations enhance both the wavevector of the distorted spiral and the critical anisotropy above which it undergoes a first-order transition into a collinear state. An experimental technique is proposed to isolate the effects of quantum fluctuations from the classical distortion of the spiral. Results of this work are used to estimate the change in spin amplitude and ellipticity in the multiferroic state of $CuFeO_2$. Research sponsored by the Division of Materials Sciences and Engineering, U.S. Department of Energy under contract with UT-Battelle, LLC.

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