Abstract Submitted
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Elastic constants and ultrasound attenuation in the spin-liquid phase of Cs_2CuCl_4[1] SIMON STREIB, PETER KOPIETZ, Institut für theoretische Physik, Universität Frankfurt, Germany, PHAM THANH CONG, BERND WOLF, MICHAEL LANG, NATALIJA VAN WELL, FRANZ RITTER, WOLF ASSMUS, Physikalisches Institut, Universität Frankfurt, Germany — The spin excitations in the spin-liquid phase of the anisotropic triangular lattice quantum antiferromagnet Cs_2CuCl_4 have been shown to propagate dominantly along the crystallographic b-axis. To test this dimensional reduction scenario, we have performed ultrasound experiments in the spin-liquid phase of Cs_2CuCl_4 probing the elastic constant c_{22} and the sound attenuation along the b-axis as a function of an external magnetic field along the a-axis. We show that our data can be quantitatively explained within the framework of a nearest neighbor spin-1/2 Heisenberg chain, where fermions are introduced via the Jordan-Wigner transformation and the spin-phonon interaction arises from the usual exchange-striction mechanism.

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