

A walk through the phase diagram of the frustrated quantum magnet Cs_2CuCl_4

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After an introduction to the magnetic properties and the effective spin-1/2 Hamiltonian of the triangular lattice antiferromagnet Cs_2CuCl_4 , we take a walk through the phase diagram of Cs_2CuCl_4 . We discuss the dimensional reduction in the spin-liquid phase [1] and present a theoretical description of the ultrasound properties in this phase [2]. Then we move to the regime of high magnetic fields, where we describe the elementary excitations as hard-core bosons, and we show how thermodynamic observables can be calculated using the self-consistent ladder approximation [3]. Finally, we touch on some open issues related to the quantum critical point in Cs_2CuCl_4 .

- [1] T. Herfurth, S. Streib, and P. Kopietz, *Phys. Rev. B* **88**, 174404 (2013).
- [2] S. Streib, P. Kopietz, P. T. Cong, B. Wolf, M. Lang, N. van Well, F. Ritter, and W. Assmus, *Phys. Rev. B* **91**, 041108(R) (2015).
- [3] S. Streib and P. Kopietz, *Phys. Rev. B* **92**, 094442 (2015).