Ultrasound Studies on Cs$_2$CuBr$_2$

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**Introduction**

A quasi-two dimensional antiferromagnet Cs$_2$CuBr$_4$ is a frustrated spin system with a distorted triangular lattice. Quantum-fluctuation-assisted 1/3 magnetization plateau was observed in this material in magnetic field about 14T and temperature $T<T_N=1.4K$ and therefore field-induced incommensurate–commensurate transitions occur at both ends of the plateau [1]. Ultrasonic experiments never have been performed on frustrated spin systems. In this project we performed a first attempt to study interaction of ultrasound waves with the quantum fluctuations and the ultrasound velocity and attenuation in the vicinity of the transitions.

**Experimental**

Measurements were performed by the pulse – echo technique in magnetic fields of up to 18T at temperature 0.3K (in SCM2 system).

**Results and Discussion**

The signals observed at low temperature were noisy and magnetic field dependencies were non-reproducible most likely due to microcracks appeared in this fragile material.

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**References**