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【160】 Spin-strain effects in the frustrated magnet $\text{Tb}_2\text{Ti}_2\text{O}_7$

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Here, we present results of ultrasound investigations of the frustrated $\text{Tb}_2\text{Ti}_2\text{O}_7$. This cubic material features a Curie-Weiss temperature of $\theta_{\text{CW}} = -19$ K, but no magnetic ordering has been detected down to 50 mK, indicating a large frustration factor.

Our ultrasound results evidence a strong spin-lattice coupling in $\text{Tb}_2\text{Ti}_2\text{O}_7$. We observed pronounced minima in the sound velocity of different acoustic modes at 0.5 K and an additional anomaly at approximately 0.15 K. Below 0.5 K, the acoustic properties show a pronounced thermal hysteresis. Moreover, some anomalies have been detected in magnetic fields applied along the [110] direction.

Possible quadrupolar ordering and a spin-liquid state are discussed for $\text{Tb}_2\text{Ti}_2\text{O}_7$ in relation to our experimental observations.

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