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Simultaneous observation of 10 MHz ultra sound in solid ^{4}He contained in torsional oscillator[1] BETTINA HEIN, University of Wuerzburg, JOHN GOODKIND, UCSD, HARRY KOJIMA, Rutgers University — Kim and Chan[1] were motivated in part by an anomalous ultra sound propagation observed by Ho et al.[2] in solid ^{4}He near 200 mK to carry out torsional oscillator(TO) experiments which led to the discovery of supersolid phenomena. We constructed a 270 Hz TO oscillator which incorporated quartz transducers for simultaneously observing 10 MHz longitudinal ultra sound and torsional oscillation of solid ^{4}He samples. We are searching for correlation between behaviors in ultra sound propagation and TO response. The length and density of dislocations extracted from ultra sound and the frequency shifts of TO measured in some half a dozen solid ^{4}He samples have not shown clear correlation.

[1] E. Kim and M. Chan, Nature **427**, 225(2004).
[2] P. Ho, I. Bindloss and J. Goodkind, JLTP **109**, 409(1997).

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