

Abstract Submitted
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**Enhanced magneto-elastic coupling
in hexagonal multiferroic HoMnO_3** MARIO POIRIER, JULIEN CAMIRAND
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From ultrasonic velocity measurements, we report a study of the magneto-elastic
coupling occurring on elastic moduli C_{11} and C_{33} at the different magnetically in-
duced phase transitions in HoMnO_3 . Although both the Ho-Mn and Ho-Ho inter-
actions soften the the elastic moduli, the largest softening is observed on C_{11} over a
wide temperature range extending well beyond the Néel temperature. An in-plane
orientation of the magnetic field reduces strongly the softening due to a stabilization
of the Mn moments order; concurrently, the Ho magnetic order is destroyed. When
the field is rather oriented along the c axis, the elastic softening is enhanced as if
the Ho-Mn interactions were reinforced and the Mn order consequently destabilized.
The phase diagram deduced from the elastic anomalies observed at the several phase
transitions are in agreement with microwave measurements performed on the same
sample. An in-plane anisotropy of the diagram is also proposed.

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