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Elastic anomalies in $HoNi_2B_2C$ single crystals A. KNIGAVKO, Department of Physics and Astronomy, McMaster University, Hamilton, Canada, V.D. FIL, A.N. ZHOLOBENKO, Institute for Low Temperature Physics and Engineering, National Academy of Sciences of Ukraine, Kharkov, Ukraine, E.-M. CHOI, S.-I. LEE, Department of Physics, Pohang University of Science and Technology, Pohang, Republic of Korea — Temperature and magnetic field behavior of elastic properties of $HoNi_2B_2C$ single crystal have been experimentally determined. The main result is a huge softening the velocity of C_{66} mode in a very wide tempearture range, which can be adequately explained in terms of a theoretical model with the Jahn– Teller interaction. This interaction is shown to be the driving force of the tetragonal- orthorhombic structural phase transition observed in $HoNi_2B_2C$ previously. The H–T phase diagrams of this compound with magnetic field oriented along principal crystal directions have been revised by means of analysis of anomalies in the sound velocity and attenuation of the C_{66} mode. New features of the phase diagrams are the critical points where several phase transition lines, separating magnetic phases, merge or maybe intersect. On the other hand, our experiments did not find manifestations of the superconducting phase transition in the acoustic properties.

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