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Elastic properties of skyrmion crystal in MnSi YOICHI NII, AKIKO KIKKAWA, YASUJIRO TAGUCHI, YOSHIHIRO IWASA, YOSHINORI TOKURA, RIKEN CEMS — Recently magnetic skyrmion, discovered in several chiral magnets, has attracted strong attention. The particle-like objects crystallize in the form of triangular lattice, in analogy with magnetic flux lattice in type-II superconductors. Here, we report the elastic properties of MnSi by means of ultrasonic measurement. We have succeeded in detecting the skyrmion crystal (SkX) phase from elastic anomalies. A clear elastic hardening in the SkX phase signifies the elastic stiffness of skyrmion lattice on the background of crystal lattice stiffness. Moreover large ultrasonic absorption was confirmed at phase boundaries between SkX and intermediate phases. From these data, we mapped out characteristic phase diagram in the skyrmion system.

Yoichi Nii
RIKEN Center for Emergent Matter Science

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