

Abstract Submitted
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Pressure tuning of spin-phonon coupling in ZnCr_2Se_4 by Raman spectroscopy XULIANG CHEN, Key Laboratory of Materials Physics, Institute of Solid State Physics, Chinese Academy of Sciences, Hefei 230031, China, XIAO-JIA CHEN, Geophysical Laboratory, Carnegie Institution of Washington, Washington, D. C. 20015, USA, ZHAORONG YANG, YUPING SUN, Key Laboratory of Materials Physics, Institute of Solid State Physics, Chinese Academy of Sciences, Hefei 230031, China, YUHENG ZHANG, High Magnetic Field Laboratory, Chinese Academy of Sciences, Hefei 230031, China, WENGE YANG, HO-KWANG MAO, Geophysical Laboratory, Carnegie Institution of Washington, Washington, D. C. 20015, USA — Raman scattering measurements are performed to investigate the phonon spectra of ZnCr_2Se_4 single crystal as functions of pressure and temperature. We find that five characteristic phonon modes vary simultaneously by changing pressure and temperature. With decreasing temperature, the phonon modes show anomalous shifts at T_E , corresponding to the temperature of negative thermal expansion of lattice. With the application of pressure, in addition to the enhancements of frequency of Raman modes, T_E shifts to higher temperature, indicative of strengthening of spin-phonon coupling.

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