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Structural and vibrational properties of $NaFe_0.925Co_0.075As$ under pressure LIU-XIANG YANG, XIAO-JIA CHEN, HO-KWANG MAO, Geophysical Laboratory Carnegie Institution of Science, Washington, DC 20015, A.F. WANG, Y.J. YAN, X.G. LUO, X.H. CHEN, Hefei National Laboratory for Physical Science at Microscale and Dept of Physics University of Science and Technology of China, Hefei 230026, China — We perform high-pressure Raman scattering and synchrotron X-ray diffraction measurements on an overdoped $NaFe_{0.925}Co_{0.075}As$ single crystal up to 20 GPa at room temperature. Both phonon spectra and structural parameters exhibit abnormal behaviors at a critical pressure around 3.0GPa. The superconducting transition temperature was observed to have a maximum at the same critical pressure. Pressure-induced modification of the Fermi surface topology is suggested to account for the observed behaviors. These results offer a better understanding on the superconductivity in this system far away the complex of structural and spin density wave phase transitions in the underdoped regime.

Liu-xiang Yang
Geophysical Laboratory Carnegie Institution of Science,
Washington, DC 20015

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