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Enhancement of transition temperature in iron based superconductor KFe_2As_2 under pressure YASUYUKI NAKAJIMA, RENXIONG WANG, TRISTIN METZ, XIANGFENG WANG, Univ of Maryland-College Park, JASON JEFFRIES, Lawrence Livermore National Laboratory, JOHNPIERRE PAGLIONE, Univ of Maryland-College Park — Superconducting pairing symmetry in the iron pnictides is one of the key issues to clarify the origin of high T_c superconductivity. The versatile pairing symmetry, including sign-reversed full gap, symmetry-imposed, or accidental nodal states, has been proposed theoretically and experimentally [1,2], and it can undergo a transition from one to another by chemical substitution or pressure. For instance, recent pressure study on heavily hole-doped KFe_2As_2 may imply a possible symmetry change accompanied by sudden reversal in pressure dependence of T_c [3]. To explore the phase diagram of KFe_2As_2 in a wider pressure range, we here report low-temperature transport study under high pressure up to 33 GPa by utilizing a designer diamond anvil cell. We will discuss the evolution of the superconducting and structural properties of this material, highlighting novel changes in the system at high pressure. [1] J.P. Reid et al., PRL 109, 087001 (2012). [2] T. Shibauchi et al., Annu. Rev. Condens. Matter Phys. 5, 113 (2014). [3] F. Tafti et al., Nat. Phys. 6, 349 (2013).

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