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High pressure magnetic phase transitions in the quasi-2D ferromagnet, $CeCrSb_3$ investigated using designer diamond anvils[1] D.D. JACKSON, S.K. MCCALL, S.T. WEIR, Lawrence Livermore National Laboratory, A.B. KARKI, D.P. YOUNG, Louisiana State University, W. QIU, Y.K. VOHRA, University of Alabama, Birmingham — Pressure tuning magnetic phase transitions is a powerful method of discovering new physical properties of materials. At ambient pressure, $CeCrSb_3$ undergoes ferromagnetic ordering at 115 K due to the Cr ions, followed by a gradual ferromagnetic alignment of the Ce moments between 48 and 18 K. The evolution of these magnetic transitions was investigated via electrical resistivity and ac magnetic susceptibility to pressures of 20 GPa using designer diamond anvils. The ferromagnetic ordering due to the Cr ions decreases at a rate of dT_{Cr}/dP =-1.75 K/GPa, while the onset of the Ce ferromagnetic ordered phase increases at a rate of dT_{Ce}/dP =3.6 K/GPa, followed by a sharp drop at P_c =11 GPa. In addition, the electrical resistivity reveals that a possible superconducting phase is found between 11 GPa$< P <$16 GPa below $T_c \approx 3$ K.

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