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Evolution of Cr's charge and spin density waves under GPa pressures YEJUN FENG, R. JARAMILLO, T.F. ROSENBAUM, JFI, U. Chicago, O.G. SHPYRKO, E.D. ISAACS, CNM, Argonne, G. SRAJER, J. LANG, Z. ISLAM, APS, Argonne, M.S. SOMAYAZULU, H.-K. MAO, Geophys. Lab, CIW, V.B. PRAKAPENKA, GSECARS, Argonne — We trace the development of Cr's charge density wave (intensity $10^{-4} \times$ Bragg peak) and spin density wave (intensity $10^{-8} \times$ Bragg peak!) at GPa pressures at the Advanced Photon Source. Using a diamond anvil cell combined with a newly developed chemical filtering technique, we find a previously unknown incommensurate to commensurate transition at 2 GPa. We analyze the incommensurate Q-vector and intensity changes at the approach to the transition. At much higher pressures (> 7 GPa), Cr's antiferromagnetism is completely suppressed and the evolution of the line shape at the approach to the quantum critical point directly reveals the role played by quantum fluctuations.

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