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Enhanced charge density wave order in $La_{2-x}Sr_xCuO_4$ at high magnetic field.[1] WEI HE, Stanford University, JIAJIA WEN, Stanford University and SIMES, SLAC, HOYOUNG JANG, SSRL, SLAC, HIROYUKI NOJIRI, SATOSHI MATSUZAWA, IMR, Tohoku University, SANGHOON SONG, MATTHIEU CHOLLET, DILING ZHU, LCLS, SLAC, MASAKI FUJITA, IMR, Tohoku University, COSTEL R. ROTUNDU, JOHN P. SHECKELTON, SIMES, SLAC, MINGDE JIANG, Stanford University, CHI-CHANG KAO, SLAC, JUNSIK LEE, SSRL, SLAC, YOUNG S. LEE, Stanford University and SIMES, SLAC
— There has been much recent interest in the charge density wave (CDW) order in the cuprate superconductors. An intriguing form of the density wave occurs in the La_2CuO_4-based family where both the charge and spin form "stripes" near 1/8 doping. Charge order has been reported in $La_{2-x}Sr_xCuO_4$ (LSCO) in zero magnetic field near 1/8 doping that was enhanced in moderate DC fields (up to 10 T). In this talk, I will discuss our recent experiment which combines a pulsed magnet with the x-rays from a free electron laser to characterize the CDW in LSCO with x=0.115 in fields up to 24 Tesla. In contrast to the YBCO family, which shows field-induced 3D CDW order, the field-enhanced CDW order in LSCO remains two-dimensional up to 24 T. Further results regarding the field-dependence and zero-field behavior of the CDW will be discussed. Our study provides important information on the interplay between CDW order and high-T_c superconductivity.

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