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X-ray diffuse scattering experiments from bismuth based high T_c superconductors M. IZQUIERDO, 1, S. MEGTERT, 2, P. A. ALBOUY, 3, J. AVILA, 1, M. A. VALBUENA, 2, G. GU, 4, J. S. ABELL, G. YANG, 5, M.C. ASENSIO, 1, R. COMES, 2 (1Synchrotron SOLEIL,2Synchrotron LURE,3LPS Orsay,4BNL,5University of Birmingham) — A detailed X-ray diffuse scattering study of the recently found two dimensional (2D) displacive short range order (SRO) superstructure, with doubled periodicity along the orthorhombic a direction from the high T_c superconductors $Bi_2Sr_2CaCu_2O_{8+\delta}$(BISCO-2212) is reported. The investigation has been extended to high and low temperatures for optimally doped crystals, to crystals with different doping levels and to the one layer compound $Bi_2Sr_2CaCuO_{6+\delta}$ (Bi-2201). The most striking feature is that both, the intensity of the diffuse scattering and the extent of the 2DSRO vary with doping as the critical temperature, T_c. These findings show that these short range ordering features are of importance for a better understanding of high Tc materials, at least those from the BISCO family.

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