



CDW in high T_c superconductors

The recent discovery that electronic periodicities are universal has shed light into the complexity of the phase diagram of cuprates and sparked the interest on competing orders of static/dynamic charge and spin modulations and superconductivity. While the low energy physics of 214 cuprates is strongly influenced by disorder, YBa₂Cu₃O₆₊ (YBCO), with orthorhombic symmetry, and related compounds with a minimal level of impurities, exhibit a momentum and field dependence of the short ranged and weakly correlated charge periodicities. The temperature dependence of the charge density wave (CDW) is maximized at T_C and interpreted as a competing phase. At fields high enough to weaken superconductivity, a long range anisotropic 3D charge density wave develops along the Cu-O chains, with ionic displacements being perpendicular and parallel to the CuO₂ planes.

Here, I will present an overview of the status and recent advances in understanding the charge ordering in high T_c cuprates, from the single crystals to thin films and superlattices by means of Resonant Elastic X Ray Scattering and Inelastic X Ray Scattering. We will discuss the effect of magnetic field, disorder, pinning and strain.

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