

Nonlinear Relaxation Through Domain Walls in the Ferroelectric State of Organic Conductors

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The ferroelectricity, related to the charge ordering, has been discovered in typical quasi-1D organic conductors and in some layered ones. The gigantic dielectric susceptibility $\sim 10^6$, coexists with a low-activated conductivity. That gives rise to the unusual material - “ferroelectric narrow gap Mott insulator”. The intrinsic conductivity by spinless particles – •-solitons, the holons, provides screening which eliminates the hysteresis common to ferroelectrics. That can lead to fast repolarisation, and even to unusual mono-domain state of the whole sample. Crossing the transition temperature recovers effects of aggregation of solitons into macroscopic domain walls. Dynamics of the walls interacting with currents of solitons poses unusual problems. We shall present and interpret the experimental data allowing to separate the critical relaxation within domains and the repolarization via sweeping of domain walls