

Abstract Submitted
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Pinched hysteresis loop in defect-free ferroelectric materials¹

BIN XU, CHARLES PAILLARD, LAURENT BELLAICHE, Univ of Arkansas-Fayetteville, BRAHIM DKHIL, Universit Paris-Saclay — In addition to the single polarization-*versus*-electric field hysteresis loop that is characteristic of ferroelectrics and the double hysteresis loop that is known to occur in antiferroelectrics, a third kind of polarization-*versus*-electric field function has been reported in several systems. This third kind is commonly termed the “pinched” loop due to its unusual shape, and is typically believed to originate from the pinning of domain walls interacting with defects. Here, using an atomistic effective Hamiltonian scheme, we demonstrate that such belief has to be broadened since our simulations also yield pinched loops in defect-free ferroelectric materials, as a result of the occurrence of intermediate modulated phases exhibiting an inhomogeneous dipolar pattern leading to the coexistence of both ferroelectric and antiferroelectric orders [1]. [1] B. Xu *et al.* Phys. Rev. B **94**, 140101(R) (2016)

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