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Evolution of Conducting Ferroelectric Domain Walls with Electron Density

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The field of domain wall electronics is part of a broad effort to engineer novel electronic functionalities in complex oxides via nanoscale inhomogeneities. Conducting ferroelectric domain walls offer the possibility of writeable electronics, for which the conduction channels may be manipulated by external fields or strains. In this talk, I discuss a simple problem, namely how the shape of a conducting domain wall changes with the density of free electrons on the domain wall. I show that the competition between electrostatic forces and domain wall surface tension naturally leads to a zigzag domain wall morphology.

Keyword-1

ferroelectric domain walls

Keyword-2

writeable electronics

Keyword-3

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