

**Every (ferroelectric) wall is a door - exploring the links between structure,
dynamics, and emergent functionalities**

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Ferroelectric domain walls between regions with different polarisation orientation are a powerful model system for the rich physics of pinned elastic interfaces, accessible with nanoscale resolution via scanning probe microscopy. Understanding the structure, geometry, and nonlinear dynamics of these domains walls is key for controlling polarisation switching and domain size, shape, and stability in memory, electro-optic, electro-mechanical and catalytic applications. I will discuss the current state of the field, emphasising the interactions between the statistical physics approach and new insights into emergent functional properties at domain walls.