

# Multiferroics from First Principles

Silvia Picozzi  
Consiglio Nazionale delle Ricerche (CNR-SPIN Chieti, IT)

In this lesson, I will give an overview on the vast phenomenology offered by multiferroics and magnetoelectrics, both in the bulk phase as well as in oxides-based junctions, focusing on the microscopic mechanisms driving multiferroicity and magnetoelectricity. In addition, I will briefly discuss how these complex materials can be modelled, showing some paradigmatic examples where theory and experiments gave a successful interpretation of the physics at play in relevant multiferroics.

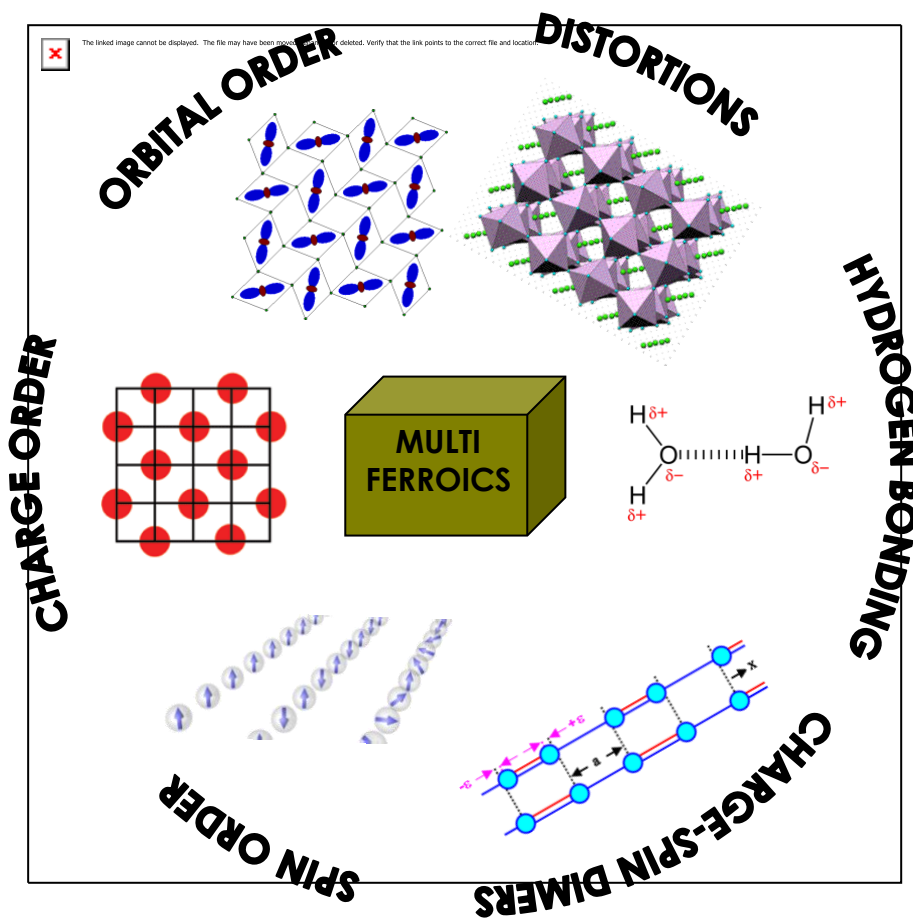


Figure 1: Pictorial representation of the different microscopic mechanisms that can lead to multiferroicity (adapted from S. Picozzi and A. Stroppa, Eur. Phys. J B 85, 240 (2012))