# Octahedra rotations coupling in perovskite vanadate heterostructures

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Octahedral rotations patterns in transition metal perovskites affect their physical properties due to the strong coupling between the lattice and the electronic degrees of freedom. Across an interface in an epitaxial heterostructure, the corner sharing of the oxygen octahedra has been shown to modify the rotation pattern of the layer; the extent and the structural details of the affected region are currently at the focus of several studies. Theoretical work indicates that such coupling could be at the origin of novel properties and functionalities.
In this work, we investigate by X-ray diffraction and scanning transmission electron microscopy (STEM) the interface between two orthorhombic materials, a $LaVO_3$ thin film epitaxially grown by pulsed laser deposition onto a $(110)_o$ $DyScO_3$ substrate. STEM imaging reveals that the interface is chemically sharp at the atomic scale while the layer possesses a pattern of rotations that depends on and evolves across the thickness of the layer.