

Abstract Submitted  
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**An X-ray magnetic circular dichroism study of the interface Magnetism in titanate Heterostructures** MARCO SALLUZZO, CNR-SPIN, Complesso MonteSantangelo via Cinthia, I-80126 Napoli, Italy, CNR-SPIN TEAM — The 2D-electron system (2DES) created at the interface between  $\text{LaAlO}_3$  and  $\text{SrTiO}_3$  have attracted strong interest in recent years. This system shows an intriguing inversion the Ti3d bands hierarchy at the interface respect the bulk [1], and some reports even suggested coexistence between ferromagnetism and superconductivity [2]. By using x-ray magnetic circular dichroism we show that oxygen vacancies induce magnetic interfacial localized  $\text{Ti}^{3+}$  states, which couple to the 2DES, with a negative exchange interaction. The magnetic dichroism signal is quenched in standard LAO/STO interfaces annealed in high oxygen pressure after the deposition and showing a homogeneous superconducting ground state [3], suggesting a decisive role of oxygen vacancies in the magnetism of these oxide interfaces [4,5].

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Marco Salluzzo  
CNR-SPIN, Complesso MonteSantangelo via Cinthia,  
I-80126 Napoli, Italy

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