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Effect of Strain on Electronic and Magnetic Structure of Fe-doped $CoFe_2O_4$[1] JARRETT MOYER, CARLOS VAZ, Dept. of Applied Physics and Center for Research on Interface Structures and Phenomena, Yale University, EZANA NEGUSSE, Dept. of Physics, Montana State University, DARIO ARENA, National Synchrotron Light Source, Brookhaven National Laboratory, VICTOR HENRICH, Dept. of Applied Physics and CRISP, Yale University — The development of new materials with large room temperature spin polarizations and small conductivity mismatches with semiconductors is key for more complex spintronics devices. $CoFe_2O_4$ has a high Curie temperature (T_C = 793 K), a large predicted spin polarization, and, when doped with iron, a conductivity similar to semiconductors; however, the magnetic properties of thin films are different from the bulk. To investigate the effect of strain, $Co_{1-x}Fe_{2+x}O_4$ thin films ($0 \leq x \leq 0.65$) are grown epitaxially on MgO (001) and $SrTiO_3$ (001) by MBE. UPS probes filled valence band states, while X-ray Linear Dichroism (XLD) determines d-orbital occupations. SQUID magnetometry and XMCD are used to determine bulk and site-specific magnetic moments, respectively. These measurements allow us to understand how strain affects the electronic and magnetic structure of $Co_{1-x}Fe_{2+x}O_4$ thin films.

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