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Doping evolution of the electronic structure in $Ba(Fe_{1-x}Co_x)_2As_2$ as revealed by polarization dependent ARPES and soft X-ray absorption PAOLO VILMERCATI, CHRISTINE CHENEY, University of Tennessee Knoxville, SUNG-KWAN MO, Lawrence Berkely National Laboratory, FEDERICA BONDINO, ELENA MAGNANO, Consiglio Nazionale delle Ricerche, MARCO MALVESTUTO, Sictrotrone Trieste, ATHENA SEFAT, MICHAEL MCGUIRE, BRIAN SALES, DAVID SINGH, DAVID MANDRUS, Oak Ridge National Laboratory, NORMAN MANNELLA, University of Tennessee Knoxville — Here we present a study based on ARPES and X-ray absorption spectroscopies in order to unveil the electronic structure evolution upon Co-doped in BaFe2As2 high Tc superconductors, for the doping levels x=(0,6,8,12,22)%. This study focuses on two points: i) the effective role of Co at different doping levels; ii) the shift upon doping of the band structure. X-ray absorption experiments carried out at the Co L23 edge highlight the chemical state of cobalt at the various doping levels, thus unveiling its role as charge donor. The orbital selectivity of polarization dependent ARPES is used to show the filling evolution of each band. The spectra have been collected in different geometries along the ΓX and ΓM high symmetry crystallographic directions and at two different photon energies. The experimental results show a general rearrangement of the charge within the various orbitals upon doping, with a non rigid band shift.

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