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**THE ITINERANT VS. LOCALIZED MAGNETIC MOMENT ISSUE, AND DOPING DEPENDENCE IN  
Fe-BASED SUPERCONDUCTORS AS REVEALED BY SOFT X-RAY SPECTROSCOPIES**

In this talk, I will discuss some of our most important results obtained with complementary soft x-ray spectroscopies such as core level and Angle Resolved Photoemission (ARPES) and x-ray absorption (XAS) on different families of Fe-SC compounds. Results concerning two main aspects particularly important for the physics of the FeSC materials will be discussed, namely (1) the dualism of itinerant and local moment, and (2) electronic structure evolution upon Co doping in  $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ . Due to extremely fast time scales involved, the detection of magnetic moments by means of magnetic probes has so far remained elusive. I will discuss how the presence of exchange multiplets in the Fe 3s photoemission spectra in different FeSC materials are indicative of the presence of fluctuating spin moments on the Fe sites amounting to  $2\mu_B$  for  $\text{BaFe}_2\text{As}_2$ . I will then show how our ARPES data supported by state-of-the-art LDA calculations and XAS experiments indicate a non-rigid band structure modification upon doping in  $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ .