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Study of the carrier content, scattering processes and the magnetic transition in $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ single crystals by transport measurements FLORENCE RULLIER-ALBENQUE, DOROTHÉE COLSON, ANNE FORGET, CEA Saclay, France, HENRI ALLOUL, LPS, Orsay, France — We present resistivity $\rho(T)$ and Hall effect measurements in $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ single crystals for a large range of Co dopings x [1]. The negative Hall constant R_H measured whatever x indicates that electrons always dominate the transport properties at all T . More precisely, the analysis of our data at low T indicates that the Hall number $n_H(T)=1/eR_H$ can be assimilated to the actual values of electron content for $x > 0.04$, in good agreement with ARPES measurements on the same samples [2]. We also show that the electron carriers have archetypal Fermi liquid behavior, with large T^2 contributions to the electron scattering rate $1/\tau_e$. We propose that the unusually large variations of carrier content for $T < 150\text{K}$ and of $1/\tau_e$ might be assigned to the small values of E_F found in these compounds. In all the magnetic samples, the spin density wave transition is signalled by a drop in n_H resulting from the gap opening associated with the nesting between the electron and hole bands. Moreover the evolution of $R_H(T)$ found for low Co dopings indicates that important modifications of the band structure of BaFe_2As_2 happen before the emergence of superconductivity at $x > 3\%$. [1] F. Rullier-Albenque et al., Phys. Rev. Lett. **103**, 057001 (2009). [2] V. Brouet et al., Phys. Rev. B **80**,165115 (2009).

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