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Unbiased Analysis of Super/Ferro Bilayer Physics THOMAS LEMBERGER, MICHAEL HINTON, JIE YONG, The Ohio State University, ADAM HAUSER, University of California, Berkeley, FENGYUAN YANG, The Ohio State University, JULIA MEYER, SPSMS, UMR-E CEA — S/F bilayer physics has been studied for some time now. With a large number of unknown and seemingly-known parameters, some values are traditionally and understandably assumed to be fixed quantities. In particular, the exchange energy, E_{ex}/k_B, is believed to be comparable to the Curie temperature. We analyze the data assuming only that the Fermi velocity v_F in F and the density of states, $2N_S(0)$, in S are known. Fitting T_c vs. d_F with the dirty-limit theory, we determine the interface resistance, R_b, the ratio $E_{ex}/\rho_F\ell_F$, and the ferromagnetic coherence length ξ_F. For physically plausible values of $\rho_F\ell_F$, the dephasing rate of cooper pairs in F is 10 times smaller than expected from the known Curie temperature of F. We propose that dephasing is mitigated by spin-orbit scattering. We also find that the transmission probability for electrons striking the F/S interface is much less than unity.

Michael Hinton
The Ohio State University

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