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ARPES observation of strong Mn-pnictide hybridization and small electronic correlations in $BaMn_2Pn_2$ (Pn = As, Sb) PIERRE RICHARD, W.-L. ZHANG, N. XU, P. ZHANG, H. MIAO, S.-F. WU, T. QIAN, S.-M. NIE, Z.-J. WANG, A. VAN ROEKEGHEM, Z. FANG, HONG DING, Institute of Physics, Chinese Academy of Sciences, ATHENA S. SEFAT, Oak Rige National Laboratory — ARPES experiments on Fe-based superconductors indicate non-negligible band renormalization due to electronic correlations. The key role attributed to a significant Hund's rule coupling in these materials and in their related isostructural nonferropnictide counterparts in tuning the electronic correlations depends strongly on the filling of the $3d$ electronic shell and are expected to reach a maximum at half-filling (Mn $3d^5$). Here we report an ARPES study of $BaMn_2As_2$ and $BaMn_2Sb_2$, which are isostructural to $BaFe_2As_2$. We show the existence of a strongly k_z-dependent band gap with a small minimum at the Brillouin zone center, in agreement with the semiconducting properties of these compounds. In contrast to the common expectation, we show that the electronic correlations in these materials are small. Our photon energy dependent study provides evidence for strong Mn-pnictide hybridization, which might play a role in reducing the electronic correlations in these compounds.

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