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Fermi arcs and phase diagram of the high-T_c cuprates: Insights from Raman and angle resolved photoemission spectroscopies. JAMES STOREY, Victoria University of Wellington, JEFFERY TALLON, GRANT WILLIAMS, MacDiarmid Institute for Advanced Materials and Nanotechnology — We calculate the B_{1g} and B_{2g} Raman responses of Bi-2212 from an ARPES-derived energy momentum dispersion and a model for the normal-state pseudogap. In light of these calculations, the Raman data demonstrates that the Fermi arc length remains finite in the pseudogap ground state. A re-examination of recent ARPES results is found to confirm this result. In addition, the presence of a van Hove singularity in the overdoped regime, as revealed by ARPES, allows us to propose a universal pairing potential that reproduces both the doping dependence of T_c, as well as the variation in $T_{c,max}$ between different species of cuprate superconductors.

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