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**3D band structure determination of BaFe<sub>2</sub>As<sub>2</sub>, CaFe<sub>2</sub>As<sub>2</sub> and SrFe<sub>2</sub>As<sub>2</sub>** QIANG WANG, ZHE SUN, Department of Physics, University of Colorado Boulder, FILIP RONNING, ERIC BAUER, Los Alamos National Laboratory, SUCHITRA SEBASTIAN, Cavendish Lab, Cambridge, UK, DANIEL DESSAU, Department of Physics and JILA, University of Colorado Boulder — The band structure of the parent compounds of iron-arsenic superconductors BaFe<sub>2</sub>As<sub>2</sub>, CaFe<sub>2</sub>As<sub>2</sub> and SrFe<sub>2</sub>As<sub>2</sub> are investigated by angle-resolved photoemission spectroscopy. The dispersion of predominant Fe 3d bands has been successfully resolved and compared with theoretical calculations. Although the overall band structure is in line with nonmagnetic DFT computations, the Fe 3d band dispersions strongly deviate from calculations, and the Fermi surface topology differs from theoretical results. These results suggest that some significant correlations have not been correctly involved in the current understanding of these new materials. The k<sub>z</sub> dependence of the band structure has also been studied for these quasi-2D materials.

Qiang Wang  
Department of Physics, University of Colorado Boulder

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