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High-energy kink in high-temperature superconductors PETER JOHNSON, TONICA VALLA, TIM KIDD, W.G YIN, GENDA GU, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, NY 11973, Z-H PAN, ALEXEI FEDOROV, Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA. — Photoemission studies show the presence of a high energy anomaly in the observed band dispersion for two families of cuprate superconductors, $Bi_2Sr_2CaCu_2O_{4+\delta}$and $La_{2-x}Ba_xCuO_4$. The anomaly, which occurs at a binding energy of approximately 340 meV, is found to be doping and momentum independent. The magnitude of the effect is momentum dependent. Scattering from short range or nearest neighbour spin excitations is found to supply an adequate description of the observed phenomena.

Peter Johı
Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, NY 11

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