**Aebi *et al.* Reply:** We would like to thank S. Chakravarty for taking an interest in our work [1]. First of all we want to point out that the aim of [1] is not at all to argue about theoretical models of the electronic structure of Bi(2212) but to present experimental data revealing features that were not observed before, intending to stimulate the development of such models. We suggested an interpretation based on simple arguments common in angular-resolved photoemission and that we still believe to hold.

The arguments presented in the Comment [2] are based on $T = 0$ properties. However, they do not apply for our experiment which is performed at $T = 300$ K and with an overall energy resolution of 30–40 meV. Remarkably, Kampf and Schrieffer [3] did predict the appearance of "shadow bands" (SB) in angle-resolved photoemission experiments due to anitferromagnetic (AF) correlations. Unfortunately we became aware of this work too late for it to be included in our paper. Within this interpretation and for an experiment performed with an infinite energy resolution we agree with Chakravarty that no superstructure should be measured on the Fermi surface because the magnetic excitations necessary to produce the momentum transfer for the $c(2 \times 2)$ superstructure on the Fermi surface are energetically separated from the Fermi energy. For a genuine, long range $c(2 \times 2)$ superstructure, however, where the reduction of the Brillouin zone is already taken into account in the energetics of the quasiparticles, all the features of the measurement will be part of the Fermi surface. It thus appears that any experimentally determined Fermi surface depends on the specifics of that experiment. The typical energies of magnetic excitations are of the order of 40 meV at $(\pi, \pi)$ (and not a few tenths of an eV as mentioned in [2]) and the corresponding width is 0.1–0.2 Å$^{-1}$. These numbers are based on neutron scattering experiments [4] and are consistent with our experiment. Having in mind these experimental facts, a simple phenomenological model of electrons coupled to AF paramagnons reproduces some features of the SB [5]. Also, the result of an analysis of the model of Kampf and Schrieffer by Haas, Moreo, and Dagotto [6] using sophisticated Monte Carlo and exact diagonalization techniques is compatible with our data. Therefore we do not share the opinion of Chakravarty that an interpretation of our data in terms of short range AF correlations is tenuous.

On the other hand, other mechanisms such as a buckling of the Cu-O layers (lying some 10 Å below the surface) can, of course, not be ruled out. Nevertheless, as already pointed out in [1], we do not believe in a genuine $c(2 \times 2)$ surface reconstruction, since we are not aware of any indication from scanning tunneling microscopy (STM) or other techniques reporting on such a reconstruction at the surface. Both low-energy electron diffraction (LEED) and photoemission are capable of detecting both effects, atomic reconstruction and AF correlations. But note that neither technique specifically detects the magnetism and therefore they do not distinguish between the two effects. Therefore STM gives the strongest argument against a genuine surface reconstruction. While photoemission, i.e., the Fermi surface measurement, gives evidence for the $c(2 \times 2)$ features *and* the ones due to the incommensurate $5 \times 1$ superstructure [1,7], LEED is dominated by the effects of the incommensurate $5 \times 1$ superstructure. This may have several reasons. The Fermi surface mapping locates the sampling to the CuO layers whereas the sensitivity of LEED is determined by the escape and penetration depth of the injected electrons. The CuO layers may already be too deep to contribute strongly to the signal. Then, the electron kinetic energies of the two techniques are quite different (a few eV for photoemission and 30–90 eV for LEED), and therefore the sensitivity to exchange scattering is also different.

The analogy to LEED and the term $c(2 \times 2)$ are used to illustrate the explanations of Fig. 2 in [1] and to show, in terms of surface physics, how the SB can be reproduced using the main Fermi surface. Note that the SB are distinctly weaker in intensity and broader. This is, as in LEED, an indication of short range order.

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