Erratum: Mode Coupling for Phonons in a Single-Layer Dusty Plasma Crystal [Phys. Rev. Lett. 105, 085004 (2010)]

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Among the features appearing in our experimental phonon spectra, there were two that we incorrectly described as modes that had not been reported or predicted previously. The first feature, named the longitudinal optical (LO) mode in Fig. 1 here, should have been identified as a mode that was predicted by the theory of [1] and first detected in the experiment of [2]. This first detection appears at 13 Hz and $ka = 1$ in the lower figure in the supplemental material of [2]. Therefore, our observation of this mode was not new, contrary to the claim in our Letter. Our experimental spectra, and our discussion of the origin of this mode, are not affected by our error in overlooking the previous prediction and observation. The second feature, marked (*) in Fig. 1 here, should have been attributed to a previously reported mode. We overlooked the fact that, because this feature is outside the limit of the first Brillouin zone, it is equivalent to a mode with a different polarization within the first zone. Such a mode was predicted in [1] where it was named the hybrid mode, and it was first observed experimentally by Couëdel *et al.* [2], who also discussed the mode in detail. Our interpretation of this feature, and our discussion of whether it is predicted by a model, were mistaken; readers should also disregard the name we presented for this mode in our Letter. We regret these errors.

We also correct some parameter values, and in Figs. 1 and 2 we provide the corresponding corrected theoretical dispersion relations. The corrected parameters are $Q = -12\,000e$, $\lambda_D = 0.76$ mm, $d_i = 0.58$ mm, and $q_i = -0.25Q$, as determined by matching our dispersion relation to our experimental spectra. In preparing the corrected dispersion relation curves, we now use an interparticle interaction for our single-layer suspension that matches the one for the upper layer in [3]. In our Letter we used a slightly different interaction, yielding a discrepancy of about 20% in the sound speed.

We inadvertently cited [1] when mentioning our eigenvalue calculation of dispersion relations. This could create the incorrect impression that we used the same theory as [1] when we interpreted our experiment. While our frictionless linear model was inspired by the seminal paper of [1], our model did not include gas friction. It also assumed a different

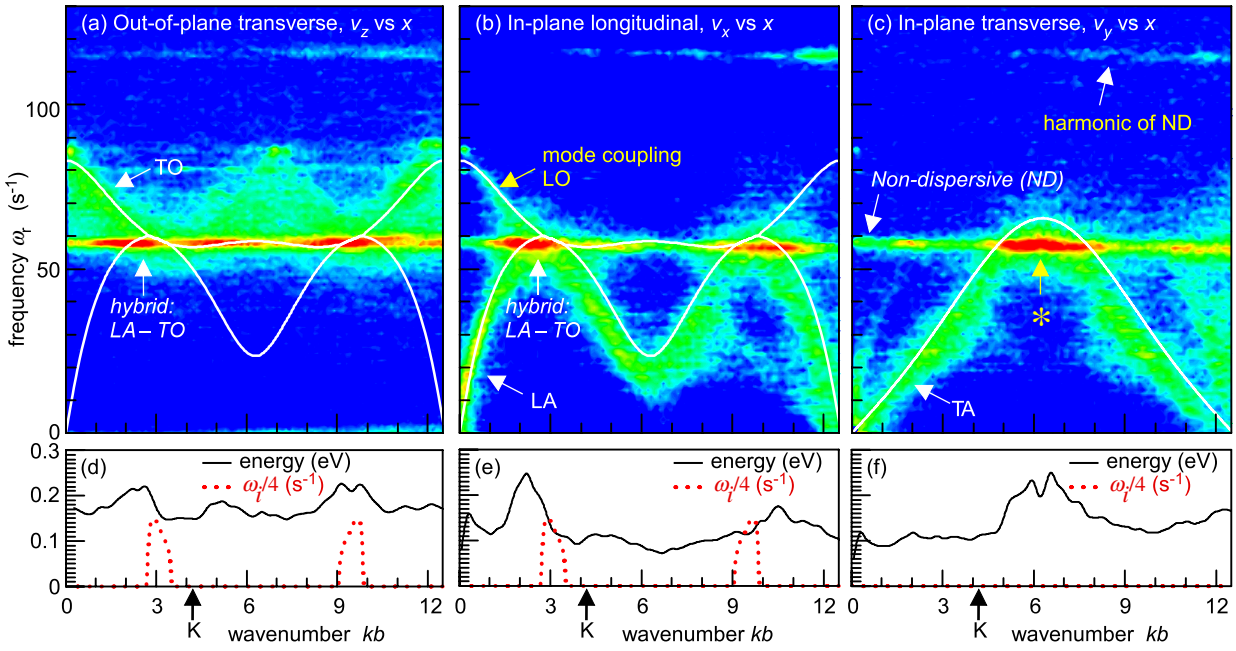

FIG. 1 (color online). Corrected version of Fig. 4 in the Letter. The experimental phonon spectra and energy partition curve are unchanged, but the theoretical curves from our eigenvalue calculations have been corrected. The effect of these corrections is visible in the curves for ω_i, and they also lead to corrected values of parameters, as reported in the text. The theoretical curves assume that $\mathbf{k}$ points 0° from $\hat{x}$. The limit of the first Brillouin zone is indicated as K.

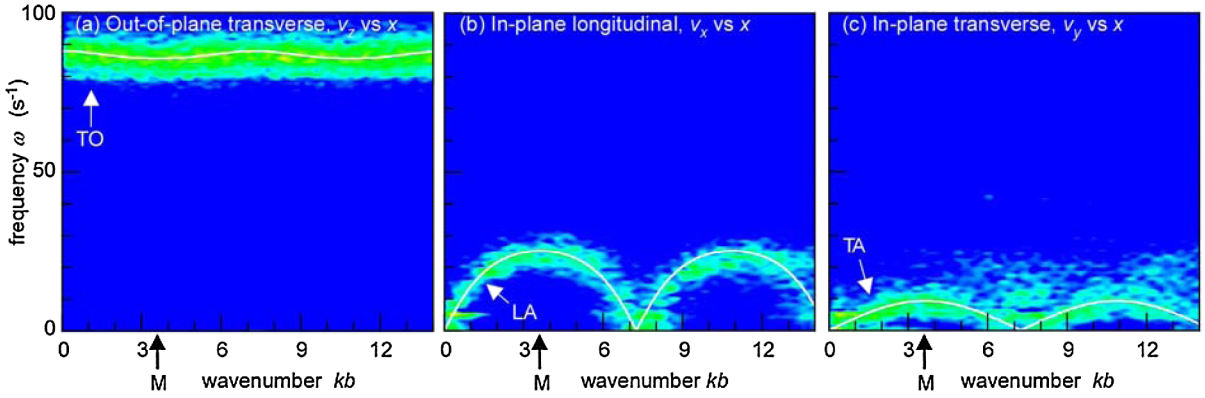

FIG. 2 (color online). Corrected version of Fig. 3 in the Letter. The experimental phonon spectra are unchanged, but the theoretical curves from our eigenvalue calculations have been corrected. The theoretical curves assume that $\mathbf{k}$ points 30° from $\hat{x}$. The limit of the first Brillouin zone is indicated as M.

interaction from the one in [1]. Now, after adopting the interaction described above, besides gas friction other minor differences between our model and the one in [1] might remain, since our model yields curves that differ by a few percent, as compared to those in Fig. 3 of [1].

We thank S. Zhdanov for pointing out the errors.

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[2] L. Couëdel *et al.*, Phys. Rev. Lett. **104**, 195001 (2010).
[3] V. A. Schweigert *et al.*, Phys. Rev. Lett. **80**, 5345 (1998).