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Field Effects on the Optical Vibrations in Bilayer Graphene JIA-AN YAN, Department of Physics, Astronomy and Geosciences, Towson University, Towson, MD 21252 USA — A first-principles study of the optical phonon modes in bilayer graphene (BLG) under a perpendicular electric field is presented. It is found that the electric field breaks the inversion symmetry of BLG and mixes the eigenvectors of the in-phase and out-of-phase optical modes. Detailed analysis shows that the mixing effect is more evident on the out-of-plane optical modes than on the in-plane modes. The field effects on the electron-phonon coupling in BLG will also be discussed.

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