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Anti-ferromagnetism enables electron-phonon coupling in iron-based superconductors SINISA COH, MARVIN L. COHEN, STEVEN G. LOUIE, UC Berkeley and Lawrence Berkeley National Laboratory — We show that a generic form of an anti-ferromagnetic wavefunction opens strong electron-phonon coupling channels in the iron-based superconductors. In the non-magnetic state these channels exist locally on a single iron atom, but are cancelled out between two iron atoms in the primitive unit cell. Our findings are mostly based on symmetry and are relevant for any iron-based superconductor. This work was supported by NSF Grant No. DMR15-1508412 and the U.S. Department of Energy under Contract No. DE-AC02-05CH11231. Computational resources have been provided by the DOE at Lawrence Berkeley National Laboratory's NERSC facility.

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