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Polarons in a dipolar condensate HONG LING, Department of Physics and Astronomy, Rowan University, Glassboro, New Jersey 08028, BEN KAIN, Department of Physics, College of the Holy Cross, Worcester, MA 01610 — We consider a polaronic model in which impurity fermions interact with background bosons in a dipolar condensate. The polaron in this model emerges as an impurity dressed with a cloud of phonons of the dipolar condensate, which, due to the competition between the attractive and repulsive part of the dipole-dipole interaction, obey an anisotropic dispersion spectrum. We study how this anisotropy affects the Cerenkov radiation of Bogolubov phonon modes, which can be directly verified by experiments in which a dipolar BEC moves against an obstacle. We study the spectral function of the impurity fermions, which is directly accessible to the momentum resolved rf spectroscopy experiments in cold atoms. This work is supported in part by the US Army Research Office under Grant No. W911NF-10-1-0096 and in part by the National Science Foundation under Grant No. PHY11-25915.

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