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Magnetodielectric consequences of phase separation in the colossal magnetoresistance manganite $Pr_{0.7}Ca_{0.3}MnO_3$ R.S. FREITAS, Department of Physics and Materials Research Institute, Pennsylvania State Univeristy, University Park PA 16802, J.F. MITCHELL, Materials Science Division, Argonne National Laboratory, Argonne IL 60439, P. SCHIFFER, Department of Physics and Materials Research Institute, Pennsylvania State Univeristy, University Park PA 16802 — We have studied the low-frequency dielectric properties of the phase-separated manganite $Pr_{0.7}Ca_{0.3}MnO_3$ as a function of applied magnetic field in the low temperature phase-separated state. The dielectric constant is strongly field dependent and also depends on the magnetic field history of the sample. The dielectric behavior appears to be associated with the hopping of polaronic charge carriers, and we can derive the field dependent hopping energy barrier from the frequency dependence of the dielectric constant. This analysis allows us to associate the metal-insulator transition observed in this material with the field-induced suppression of the polaron activation energy. Reference: *Phys. Rev. B* **72**, 144429 (2005). Research was supported by the NSF and DOE.

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