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E-Field Conditioning and Charging Memory in Low Density Polyethylene JERILYN BRUNSON, J.R. DENNISON — Accurate measurement of electronic properties in extremely high resistivity materials must take into account a number of ways in which the measurements influence the materials properties being probed. These can include the strength of the applied electric field, the number of successive exposures to an applied field, the duration of exposure, and recovery time allowed during exposure cycles. An extensive series of constant voltage measurements of the resistivity of low density polyethylene samples were taken to determine consistency of measured resistivity results, the effects of varying electric field amplitude, and the extent of charging memory. Higher electric fields were found to lower the resistivity, as predicted by hopping conductivity models of polymers. Measurements at a particular voltage showed that the dark current resistivity approach successively lower values with repeated exposure.

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