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Dynamics of the Electro-Optic Response of Blue Bronze LUIS LADINO, MIRAJ UDDIN, MARIO FREAMAT, JOSEPH BRILL, University of Kentucky — We have measured the frequency, voltage, and position dependence of the electro-transmittance and electro-reflectance of the charge-density-wave (CDW) conductor blue bronze at T $\sim$ 80 K when square-wave voltages are applied to the sample. The electro-optic response, assumed to be proportional to the local strain of the CDW, is characterized in terms of a relaxation time and a surprisingly long ($>$ 0.1 ms) "inertial" delay for CDW repolarization. At a given position in the sample, the relaxation time increases with decreasing voltage, as expected. Both time constants increase away from the current contacts, indicating that the inertia is not due to barriers at the contacts. For one sample, the electro-optic response is also observed to decay for times $\sim$ 10 ms. This research was supported by NSF grants # DMR-0100572 and DMR-0400938.

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