

Abstract Submitted
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Critical fields, vortex melting and the irreversibility line in quasi 2D organic superconductors.¹ BRAUNEN SMITH, KYUIL CHO, CHARLES AGOSTA, Clark University — We have measured the critical field and aspects of the vortex structure in anisotropic organic superconductors using pulsed and dc fields up to 50 and 45 T respectively and at temperatures down to 55 mK. In all cases we measured the penetration depth using the tunnel diode oscillator technique. When the sample is oriented with the conducting planes parallel to the applied magnetic field, we have found that the irreversibility line does not extrapolate to the high fields predicted by Mola et. al. [1] based on their measurements and the use of the Tinkham equation. We also find that many signatures of the vortex system, such as jumps, melting and hysteresis are absent in this parallel sample orientation. In addition, when using a pulsed field apparatus we have consistently measured lower critical fields than we find from the use of dc field apparatus. We assume this is due to a time constant associated with the vortices entering and leaving the sample, but not all of our data supports this claim. [1] M.M. Mola, S. Hill, J.S. Brooks, and J.S. Qualls, Phys. Rev. Lett. **86**, 2130 (2001).

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