Abstract Submitted
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**Specific heat studies of heavy ion irradiated YBCO.**[1] RUOBING XIE, A. RYDH[2], U. WELP, W. K. KWOK, M. ESKILDSEN, Department of Physics, University of Notre Dame, Notre Dame, IN 46556, L. PAULIUS, Department of Physics, Western Michigan University, Kalamazoo, MI 49008 — We present a systematic study of the effect of heavy ion irradiation induced columnar defects on the vortex phase diagram in single-crystal $YB_2Cu_3O_7$using ac - specific heat measurements. In pristine, naturally untwinned crystals the transition between the vortex liquid and vortex lattice states in intermediate fields is of first order as evidenced by a sharp peak in the specific heat. On our sample we observed the first order transition between the lower critical point near 0.35T and the upper critical point near 6T. The pristine sample was cleaved into several pieces of typical size 70x100x9 $\mu$m, which were irradiated along the c axis with 1.1 GeV Pb ions at different dose matching fields ranging from 0.1 T to 0.35 T. Specific heat measurements pertaining to the transformation of the first order transition to higher order with increasing disorder as exemplified by the shift in the lower critical point will be addressed.

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