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Study of the universal behavior of the vortex phase diagram in proton irradiated YBCO single crystals LUCIAN UNDREIU, LISA PAULIUS, Western Michigan University, Kalamazoo, Michigan 49008, CHRISTOPH MARCENAT, Commissariat d'Energie Atomique, DRFMC/SPSMS/LCP, Grenoble, France, VALENTINA TOBOS, Western Michigan University, Kalamazoo, Michigan 49008, WAI KWOK, Materials Science Division, Argonne National Laboratory, Argonne, IL 60439 — The goal of our work is to gain more insight into the vortex dynamics in $YBa_2Cu_3O_{7-\delta}$ single crystals with point defects induced by 9 MeV proton irradiation. In order to accomplish a comparative study, different crystals and irradiation doses were used. The results were correlated using both electrical transport and ac specific heat measurements. Special attention was given to investigating the nature of the vortex state below the lower critical point of the first order vortex melting transition. This work was supported by the National Science Foundation through Grant DMR-0072880 and the U. S. Department of Energy, Basic Energy Sciences contract W-31-109-ENG-38.

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