

COMPARISON OF VORTEX LATTICE PHASE DIAGRAM IN HIGH- T_c SUPERCONDUCTORS AND IN MgB_2

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MgB₂ is, particularly concerning influence of thermal fluctuations on vortex lattice, intermediate compound between high- T_c cuprates and low- T_c superconductors. In the $H - T$ phase diagram, lines that determine transitions between various phases of vortex matter to great extent may be modified by irradiation induced defects and/or by disorder due to chemical substitutions. The changes of superconducting properties of pure and carbon-substituted MgB₂ single crystals prior to and after fast neutron irradiation will be presented. The observed changes in upper critical field, flux pinning and disorder induced phase transition between the Bragg glass and a highly disordered phase of vortex matter will be discussed in terms of the characteristic length scale of the defects in comparison with the coherence length and compared with effects observed in high- T_c superconductors.

13.4 cm

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9.7 cm