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Observation of Anomalous Reentrant Superconductivity in Gd added Bi-2223 Superconductor MURAT ERDEM, CABIR TERZIOGLU, AHMET VARILCI, Abant Izzet Baysal University — We report the observation of an anomalous reentrant superconducting-normal resistive transition behaviour in Gd added $Bi_{1.8}Pb_{0.35}Sr_{1.9}Ca_{2.1}Cu_3Gd_xO_y$ superconductor with x=0, 0.1, 0.2, 0.3, 0.4 and 0.5. The resistive transitions of the samples are measured by four probe contact method under different magnetic fields. Zhao et. al. [1] first observed this behaviour in Bi-2212/2223 intergrowth single crystals. This is interpreted using a model where Josephson coupling between the CuO2 trilayers is weakened by thermally activated resistance. Similar observations are made in the literature [2], [3]. Possible physical origins of this anomalous phenomenon are discussed.

[1] Zhao Y. , et. al. , Physical Review **B** 51, 3134 (1995)
[2] Wang W. , et al. , Physica **C** 341-348, 1921 (2000)
[3] Kim D. C., et al., Physical Review **B** 64, 064502 (2001)

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