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### Study on superconducting welding method of Gd-Ba-Cu-O Bulk Superconductors for pulsed field magnetization

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We are investigating the effect of welding of Gd-Ba-Cu-O bulk superconductors on the trapped field properties obtained by pulsed field magnetization (PFM). RE-Ba-Cu-O bulk superconductors can trap a strong magnetic field below  $T_c$ , therefore, several applications like magnetic separation systems or motors using these strong compact magnets are being considered. The combination of bulk superconductor and the PFM method is one of the promising ways to design a simple superconducting bulk magnet device. However, in case of PFM, it is slightly difficult to trap a high magnetic field due to fast flux movement and heat generation during the PFM process. In order to overcome such a hurdle, we are studying welded bulk superconductors and the effect of an artificial superconducting grain boundary with different pinning and thermal properties compared to superconducting bulk body. There is a chance, by employing the artificial grain boundary by welding method, to enhance the performance of PFM processed magnets. In this paper, a Gd-Ba-Cu-O/Ag cut sample of 30 mm in diameter, taken from a single grain bulk, was split along the (110) plane then welded using Er-Ba-Cu-O/Ag solder. Trapped field distribution has been measured at 40 K after PFM with different applied fields. Finally, we discuss the potential of superconducting welding processes for the PFM.

Keywords: Bulk superconductor, welding process, pulsed field magnetization