Abstract Submitted
for the TSF11 Meeting of
The American Physical Society

Development and Characterization of a Highly Textured Bi-2212 Superconducting Ribbon[1] KYLE DAMBORSKY, Texas A&M University, Accelerator Technology Co., FENG LU, PETER MCINTYRE, NATHANIEL POGUE, ELIZABETH SOOBY, Texas A&M University — Development of future hadron colliders, high field NMR spectrometers, and a potential muon collider are dependent upon the availability of superconducting materials capable of producing magnetic fields greater than the upper critical fields of NbTi (12 T) and Nb3Sn (24 T) at 1.9 K. One such material is the high temperature superconductor Bi-2212 which has an upper critical field in excess of 45 T and is presently available as a fine filament round wire. The use of Bi-2212 in very high field magnet development is limited by the small fraction of the intrinsic critical current density achieved in the industry standard oxide powder in tube process wires. This approach is limited by a large porosity, parasitic phase growth, and poor connectivity due to poor texture of the superconducting grains within conductor filaments. To reduce these damaging effects, the authors report upon the development of a new process for pretexturing and compacting fine powder Bi-2212 into highly textured, high density ribbons through a roll processing technique. These ribbons may then be further formed into a round wire conductor through a modified jelly roll process. Details of the roll processing technique and jelly roll conductor will be presented along with an initial characterization of the ribbons.

[1]This work was supported in part by the DOE SBIR program.

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Date submitted: 07 Sep 2011 Electronic form version 1.4