

Texturing of Micaceous Superconductor Powder and Fabrication of Wire to Preserve the Texture

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Abstract - The superconducting magnet, cryogenics, and detector systems of the AMS experiment was fully integrated and tested in test beam at CERN during 2009. In Spring 2010 the experiment underwent thermal vacuum tests at ESTEC, where it was operated in conditions simulating those that will pertain in orbit. All elements of the superconducting magnet and cryogenics performed as designed, and equilibrium operation was attained at several values of vacuum case temperature. Details of the tests are presented. A thermal model of the overall cryogenic system was calibrated from those measurements. The model was used to predict the cryogenic lifetime of the experiment, as it would be staged on ISS, to be (28 ± 6) months.

Index Terms - high temperature superconductor, texture, powder processing, wire.

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