

Title: Assessment of Alphas Magnetic Spectrometer (AMS) Upper Experiment Structural Configuration Shielding Effectiveness Associated with Change from Cryo-Cooled Magnet to Permanent Magnet

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Abstract: In the spring of 2010, the Alpha Magnetic Spectrometer 2 (AMS-02) underwent a series of system level electromagnetic interference control measurements, followed by thermal vacuum testing. Shortly after completion of the thermal vacuum testing, the project decided to remove the cryogenically cooled superconducting magnet, and replace it with the original permanent magnet design employed in the earlier AMS-01 assembly. Doing so necessitated several structural changes, as well as removal or modification of numerous electronic and thermal control devices and systems. At this stage, the project was rapidly approaching key milestone dates for hardware completion and delivery for launch, and had little time for additional testing or assessment of any impact to the electromagnetic signature of the AMS-02. Therefore, an analytical assessment of the radiated emissions behavioural changes associated with the system changes was requested.

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