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# AMS-02 Layer0 Tracker Upgrade

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The Alpha Magnetic Spectrometer (AMS-02) detector operates on the International Space Station. It performs high-precision measurements of cosmic ray composition and fluxes, and searches for antimatter and dark matter. To increase the cosmic-ray detection acceptance and improve the heavy ion identification performance, the AMS collaboration plans to add a new layer (L0) of silicon tracker on top of the existing AMS-02 detector. The new detector layer consists of 2 planes, which include 72 silicon strip detector ladders. Each ladder has 8, 10, or 12 silicon strip detector sensors (SSDs) connected in serial, producing an effective strip length of about 0.6 to 1 meter. The total sensitive area is about 8㎡. All the ladders are assembled in IHEP, China.

We will present the system design of the L0 layer, the assembly procedures of ladders, and QA/QC criteria. To study the detector ladder in cosmic rays and particle beams, and calibrate the L0 tracker with particle beams before launching to space, a beam monitor has been produced. Details of the L0 layer ladder and beam monitor's performance will be described.

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