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## **Isotope studies with the Alpha Magnetic Spectrometer (AMS) - RICH velocity reconstruction features and corrections**

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Cosmic rays, high-speed charged particles traversing the universe, yield crucial insights into cosmic phenomena. Understanding the production, acceleration, and propagation of these particles requires analyzing the relative abundances of different isotopes, which relies on precise mass measurements. The Alpha Magnetic Spectrometer (AMS) on the International Space Station provides these measurements, with accuracy dependent on precise velocity data. The Ring Imaging Cherenkov Detector (RICH), a subdetector of AMS, measures particle velocity using the Cherenkov effect. This study proposes enhancing the velocity reconstruction algorithm by incorporating a plastic foil within the RICH as an additional Cherenkov radiator, aiming to boost velocity measurement precision and hence improve isotopic separation.

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