A 1 eV - 1000 eV ion beam system designed for the calibration of low-energy ion mass spectrometers

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For the calibration of space plasma analyzers, in particular low-energy ion mass spectrometers, a low energy ion beam system was developed. The positive ion beam is produced by a hot-cathode penning source and modified by a series of electrostatic lenses. And a 75 mm diameter 2-D imaging system and a Faraday cup mounted on movable arms are used for ion beam diagnostics. With protons as primary species, the system provides an ion beam in the energy range of 1 eV - 1000 eV with a large area (~ 50 cm²), highly parallel (± 0.5°), and spatially uniform (± 5%).