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The Compton Spectrometer and Imager (COSI)

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The Compton Spectrometer and Imager (COSI) is a Small Explorer satellite mission selected by NASA and scheduled to launch in 2027. COSI employs a novel Compton telescope consisting of a compact array of cross-strip germanium detectors. Owing to its wide field-of-view and excellent energy resolution, COSI will achieve an unprecedented sensitivity in the MeV range, especially for gamma-ray emission lines in the 0.2-5 MeV energy band. In this talk, I will provide an overview of the instrumental design of COSI and its four key science goals, the origin of Galactic positrons, nucleosynthesis in the Galaxy, polarization studies of gamma-ray bursts, and multi-messenger astrophysics. Also, I will present the current status of the project and the publicly-available data challenges released every year.

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