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A new constraint on the origin of Galactic Center positrons

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Positron annihilation has been observed toward the center of the Galaxy for around 50 years, via the detection of gamma-rays produced in positron-electron co-annihilation. However, the origin of these positrons remains uncertain, and proposed sources include the annihilation or decay of Dark Matter. Constraining the injection energy of the positrons allows us to constrain the origin of the positrons. The in-flight annihilation of positrons with kinetic energies >1 MeV results in the emission of excess continuum emission above 511 keV. I present a novel analysis of almost 2 decades of INTEGRAL telescope gamma-ray data and a new constraint on the injection energies and sources of the positrons observed to annihilate toward the Galactic center.

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