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The Gamma-ray Spectrum of PKS 1424+240, the Most Distant TeV Source

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The very-high-energy (VHE) gamma-ray source PKS 1424+240, a blazar, has Lyman forest absorption in its UV spectrum out to a redshift of 0.6035, making it the most distant VHE gamma-ray source known. At a redshift at least this high, the most energetic gamma-rays detected in archival results from this blazar are expected to be strongly absorbed by interactions with the extragalactic background light. Correcting for this absorption results in a spectral shape not well described by a power law or log parabola. We expand upon this puzzling result with deeper VERITAS observations and contemporaneous Fermi Large Area Telescope and Swift XRT data. We show the particularly soft X-ray spectrum of the blazar, and explore possible mechanisms which might produce the unusual gamma-ray spectral shape.

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