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Energy-Position Correlation Anisotropy of Ultra-High Energy Cosmic Rays with Telescope Array Data: New Indications of the Northern Hotspot

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An Ultra-High Energy Cosmic Ray (UHECR) anisotropy search has been done using apparent originating position and the incident particle energy using seven years of Telescope Array data. The result indicates evidence for a source in the vicinity of the previously reported Northern hotspot. Cosmic ray particle deflection away from sources by magnetic fields, are expected to create correlations between energy and location. A study of this effect should include as few assumptions as possible and be robust against background noise events. An unbinned energy-opening angle rank correlation makes no assumptions regarding source distribution, event composition, originating energy spectrum, or magnetic field configurations.

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