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Completing and Improving the TeV Cosmic-ray Sky with HAWC

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In 2015, the HAWC Observatory was completed and began operation as the most sensitive TeV cosmic-ray detector in the Northern Hemisphere. Since that time, we have recorded over 1 trillion cosmic-ray air showers, designed a likelihood-based cosmic-ray energy reconstruction, and implemented a new minimally-biased method for reconstructing all-sky anisotropy. These three advances in statistics, energy resolution, and signal recovery allow us to better disentangle the properties of the TeV cosmic-ray anisotropy from detector effects. This has led to a combined anisotropy sky map with IceCube in the Southern Hemisphere. Although the nature of this anisotropy has been explored and modeled, the exact realization of the anisotropy could hold clues important to describing local accelerators of observed cosmic rays and the local magnetic fields through which they propagate. We will share our results for both HAWC and the combined HAWC-IceCube anisotropy sky maps.

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