## TeV Particle Astrophysics 2017 (TeVPA 2017)



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## **Observation of the Moon and Sun with HAWC**

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The Sun and Moon produce deep deficits in the nearly isotropic flux of TeV cosmic rays measured at Earth. Observations of these cosmic-ray deficits, or "shadows," can provide unique measurements of the solar and Galactic environment. For example, the displacement of the shadow of the Moon in the geomagnetic field allows for charge discrimination of high-energy Galactic cosmic rays. The Sun shadow varies strongly with the solar cycle, and multi-year measurements enable precise tests of coronal magnetic field models. Moreover, the Sun may also be a TeV gamma ray source due to interactions of Galactic cosmic rays in its photosphere. The High Altitude Water Cherenkov (HAWC) Observatory, a wide field-of-view detector of TeV cosmic rays and gamma rays, performs unbiased high-statistics measurements of the Sun and Moon each day. Using measurements of the Moon shadow with two years of data from the complete HAWC array, we will present strong limits on the flux of antiprotons above 1 TeV. We will also present the first upper limits on the flux of gamma rays above 1 TeV from the solar disk.

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