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The performances of the LHAASO-KM2A tested by the observation of cosmic-ray Moon shadow.

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The half array of the KM2A in LHAASO has been operated since the end of 2019. It is a major ground-based array for the researches on cosmic rays around knees and the gamma-ray astronomy at ultra-high energy, which depends heavily on its performances. The cosmic-ray Moon shadow, which is observed by KM2A with monthly significance of 25 standard deviation, is used as an unique and powerful source to test the array's performances. Through the observation of the characteristics of the Moon shadow, including the displacement from the centre, the shape, the deficit, and their variation with the time and energy, we discuss the pointing error, the angular resolution, the long-term stability of the KM2A and the absolute energy scale of the primary cosmic-ray particles. In particular, the position of Moon varies within a declination band of about ±25°, the pointing errors of KM2A to observe sources at different declinations are thoroughly tested in this work.

Keywords

Moon Shadow；performance of LHAASO-KM2A

Collaboration

Lhaaso

other Collaboration

Subcategory

Experimental Results

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