



Solar eclipse monitoring for solar energy applications

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In recent years, the interest in using solar energy as a major contributor to renewable energy applications has increased, and the focus to optimize the use of electrical energy based on demand and resources from different locations has strengthened. This article includes a procedure for implementing an algorithm to calculate the Moon's zenith angle with uncertainty of $\pm 0.001^\circ$ and azimuth angle with uncertainty of $\pm 0.003^\circ$. In conjunction with Solar Position Algorithm, the angular distance between the Sun and the Moon is used to develop a method to instantaneously monitor the partial or total solar eclipse occurrence for solar energy applications. This method can be used in many other applications for observers of the Sun and the Moon positions for applications limited to the stated uncertainty.