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All Sky Camera instrument for night sky monitoring

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The All Sky Camera (ASC) was developed as an universal device for a monitoring of the night sky quality and night sky background measurement. ACS system consists of an astronomical CCD camera, a fish eye lens, a control computer and associated electronics.
The measurement is carried out during astronomical twilight. The analysis results are the cloud fraction (the percentage of the sky covered by clouds), night sky brightness (in mag/arcsec2) and light background in the field of view of UHECR instruments.
The analysis of the cloud fraction is based on the astrometry (comparison to catalogue positions) of the observed stars, the algorithm for derivation of the night sky brightness, and examples of obtained results.
The instrument is used within Pierre Auger Collaboration and CTA Site Selection Work Package.

ASC camera consists of MII G1-2000 camera Moravian Instruments), Fujinon objective YV2.2x1.4A-SA2 and electronics.
Original picture resolution is 2 Mpix –16 bit depth, monochrome
The algorithm to calculate the cloud fraction compares the stars found in the image and their visible counterparts from a star catalogue (angular distance is typically less than 0.5 degree).
The system is more versatile, it could generate cloud fraction of a chosen sky region to drive a robotic telescope, measure the night sky background of a chosen sky region calibrated to a custom instrument etc.

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