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The JEM-EUSO time synchronization system

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The JEM-EUSO instrument is a wide-angle refractive telescope in near-ultraviolet wavelength region being proposed for attachment to the Japanese Experiment Module onboard ISS. The instrument consists of high transmittance optical Fresnel lenses with a diameter of 2.5 m, a focal surface covered by 4932 MAPMTs of 64 pixels, front-end readout, trigger and system electronics. The tracks generated by the Extensive Air Showers produced by UHE primaries propagating in the atmosphere, are reconstructed on the focal surface by registering in a cyclic memory, every 2.5 microseconds, the data coming from the 315648 pixels and by selectively retrieving only the interesting ones on the occurrence of a second level trigger. In order to guarantee the correct time alignment of the events and to measure the arrival time of the event with a precision of few microseconds, a clock distribution and time synchronization system for the focal surface electronics has been developed. In this poster we will present the status and the technical solutions adopted so far.
We will also describe the version of the system developed for the EUSO-BALLOON experiment, a JEM EUSO pathfinder mission, planned for the 2013, in which a telescope of smaller dimension than the one designed for the ISS, will be mounted on board a stratospheric balloon.

for the collaboration

JEM EUSO

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