

Determination of inter-system timing for Mini-CBM in 2020

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Future operation of the CBM detector requires ultra-fast analysis of the continuous stream of data from all subdetector systems. Determining the inter-system time shifts among individual detector systems in the existing prototype experiment Mini-CBM is an essential step for data processing and in particular for stable data taking. Based on the input of raw measurements from all detector systems, the corresponding time correlations can be obtained at digital level by evaluating the differences in time stamps. If the relevant systems are stable during data taking and sufficient digital measurements are available, the distribution of time differences should display a clear peak. Up to now, the outcome of the processed time differences is stored in histograms and the maximum peak is considered, after the evaluation of all timeslices of a run leading to significant run times. The results presented here demonstrate the stability of the synchronicity of Mini-CBM systems. Furthermore it is illustrated that relatively small amounts of raw measurements are sufficient to evaluate corresponding time correlations among individual Mini-CBM detectors, thus enabling fast online monitoring of them in future online data processing.

Primary author: Dr REDELBACH, Andreas Ralph (Goethe University Frankfurt (DE))

Presenter: Dr REDELBACH, Andreas Ralph (Goethe University Frankfurt (DE))

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