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Offline filter of data with abnormal high voltage at BESIII drift chamber

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Stable operation of the detector is essential for high quality data taking in high energy physics experiment. But it is not easy to keep the detector always running stably during data taking period in environment with high beam induced background. In the BESIII experiment, serious beam related background may cause instability of the high voltages in the drift chamber which is the innermost sub detector. This could result in the decrease of gain and wrong dE/dx measurement. The relationship between the dE/dx measurement and the changes in high voltages has been studied. To guarantee the data quality for the physics study, an offline filter algorithm has been developed to remove the events with abnormal high voltages of the drift chamber. After applying the event filter on the data set with serious high voltage instability, the events with wrong dE/dx measurement were removed effectively.

Significance

References

Experiment context, if any

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