

Visualization for physics analysis improvement and applications in BESIII

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Modern particle physics experiments usually rely on highly complex and large-scale spectrometer devices. In high energy physics experiments, visualization helps detector design, data quality monitoring, offline data processing, and has great potential for improving physics analysis. In addition to the traditional physics data analysis based on statistical methods, visualization provides unique intuitive advantages in searching for rare signal events and reducing background noises. By applying the event display tool to several physics analyses in the BESIII experiment, we demonstrate that visualization can benefit potential physics discovery and improve the signal significance. With the development of modern visualization techniques, it is expected to play a more important role in future data processing and physics analysis of particle physics experiments.

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