Properties of robust vertex fitting algorithms at high luminosity HEP experiments

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Abstract

Robust vertex fitting algorithms are expected to improve the knowledge of the vertex position and of its uncertainty, in the presence of mis-measured or mis-associated tracks. Such contaminations are likely to happen in high luminosity HEP experiments. We have performed a simulation study of the sensitivity of two types of robust algorithms : a trimmed least-squares estimator and an adaptive estimator. Their statistical properties are studied as a function of the source and the level of contamination, and compared to the results obtained with classical least-squares estimators.

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