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## Ultimate precision of a tracking system in future high energy experiments

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One of the top goals of a high energy experiment is to perform precision tests on the Standard Model and probe new physics beyond the Standard Model. Therefore, it is essential to precisely measure the momenta and impact parameters of charged tracks. Because of the rapid advancement of technology, excellent tracking systems could be built. The most accurate silicon pixel tracker is approaching the spatial resolution of micron-level and a material budget of sub-permille-level. As a result, the trade-off between spatial resolution and material budget becomes critical. Analytical calculation and fast simulation are used to examine the maximum accuracy of a tracking system with restricted resolution and material budget. These conclusions could be beneficial for future experiments.

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