

## High precision tracking for J-PARC (g-2)/EDM experiment.

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The J-PARC (g-2)/EDM experiment features a novel experimental idea of the anomalous magnetic and electric dipole moments of the muon. The goals of the experiment are to improve the precision of the previous measurement of the E821 experiment at BNL that sets the measurement significantly away from theory; therefore, providing an evidence for new physics. The systematic uncertainties of the experiment vastly differ from E821; thus, it will provide an independent result of the discovered anomaly. In this study, we use a high precision beam and spin dynamics tracking to assess possible systematic uncertainties and relevant corrections for the experiment. We demonstrate the power of the simulation tracking tool and possible areas of using it to further enhance the sensitivity of the experiment. A specific application on so-called pitch effect and momenta distribution will be shown.

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