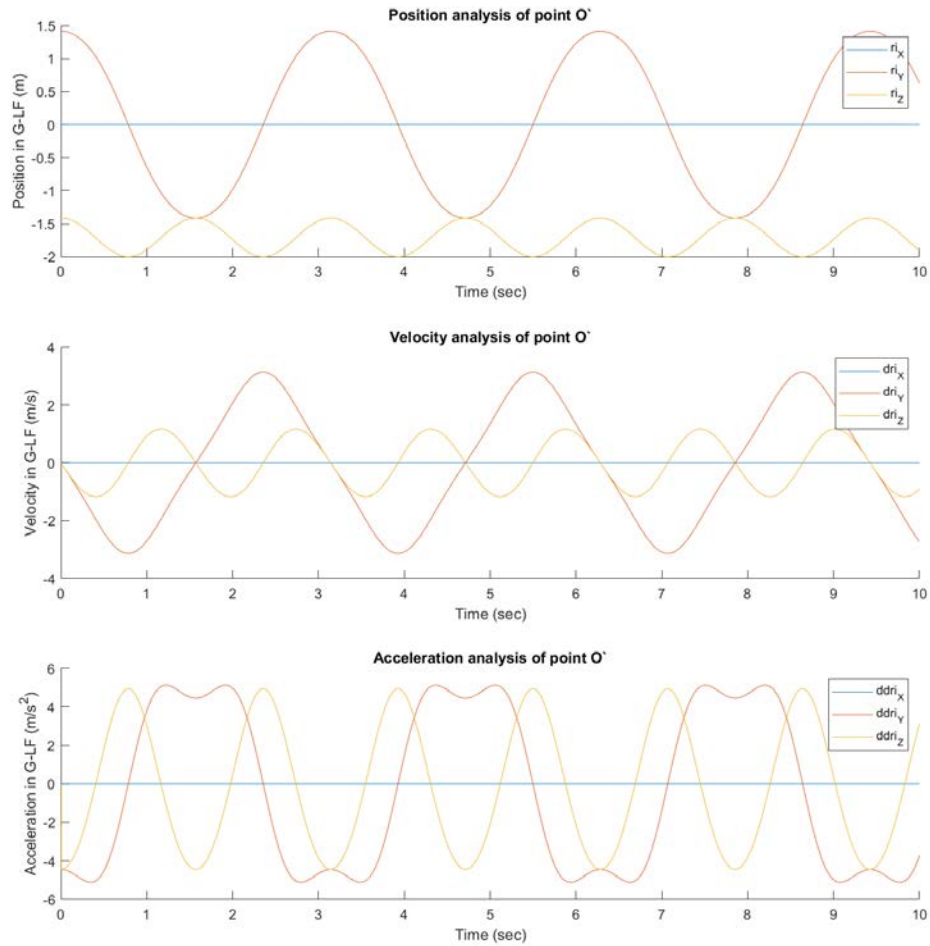# Kinematic Analysis Report

Note: The data and plots for kinematic analysis can be obtained by running the MATLAB script "simEngine3D_A6P3.m".

(1) location/velocity/acceleration of point O'

The pendulum can only move in the OYZ plane, therefore the location/velocity/acceleration in X direction are all zeros. The position and velocity in Y & Z direction are sine waves which might result from the specified motion $f(t) = \frac{\pi}{4}\cos(2t)$.

(2) location/velocity/acceleration of point Q
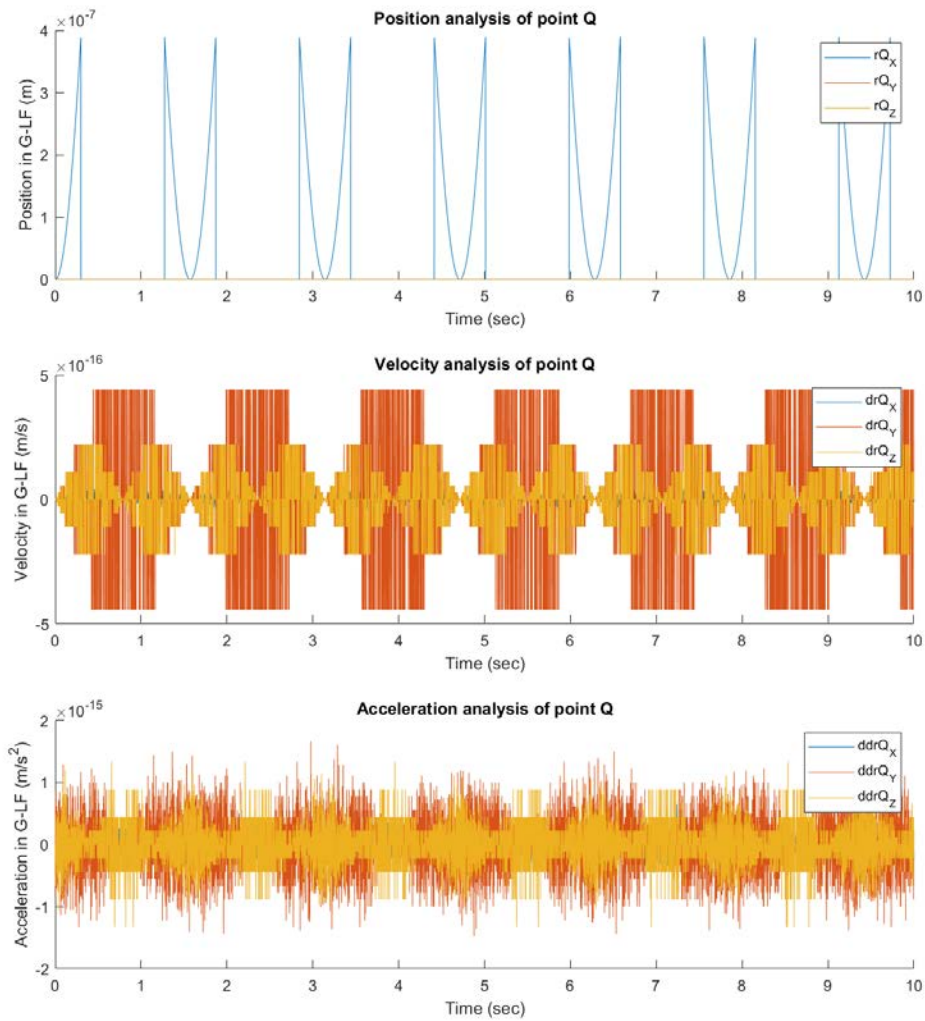
All the variables of point Q are extremely close to 0 which makes sense as point Q is attached to the origin of G-RF and does not move. However, they are still noisy and do not exactly equal to 0. This might be because we are using the Newton-Raphson method to solve the nonlinear equations and the solutions we get have limited precision. It looks like the values are periodic probably because the motion of the pendulum is also periodic.