



Orbit propagation of LEO satellites applying Multi-Step and Single-Step Integrators

M. Mahooti

Tehran, Faculty of Engineering, Geomatics, Islamic Republic Of Iran (meysam.mahooti@gmail.com)

Abstract

The actual motion of a satellite is affected by various forces including gravitational and non-gravitational ones. The equations of perturbed motion can be solved by integrating either analytically or numerically. To solve the equations numerically, a full force model is used with a numerical integrator. Numerical integrators are classified in two categories: multi-step and single-step. Single-step integrators are often preferable to multi-step integrators because they don't require a sequence of back values to start the integration. The Runge-Kutta and the Adams-Bashforth-Moulton are the most popular single-step and multi-step integrators, respectively. In this paper, efficiency of these integrators is evaluated.

Key words: Orbit propagation, LEO satellites, Runge-Kutta, Adams-Bashforth-Moulton