

## Anomalistic Period of a Satellite - Numerical Integration Solution

This *Numerit* application (`period3`) calculates the *anomalistic* period of an Earth satellite using a gravity model that includes  $J_2$ . The anomalistic period is the time interval required for a satellite to travel from one perigee to the next. This computer program performs one-dimensional root-finding while numerically integrating a satellite's equations of motion. The equations of motion can be expanded to include other perturbations such as aerodynamic drag, higher-order gravity effects and so forth.

The following is a draft display created with this software:

```
program period3
< anomalistic period - integrated solution >

perigee altitude      1501.86 kilometers
apogee altitude      1741.86 kilometers

semimajor axis        8000 kilometers
eccentricity          0.015
inclination           28.5 degrees
argument of perigee   270 degrees
raan                  100 degrees

Keplerian period      118.6846843 minutes
anomalistic period    118.6422201 minutes
```