1. Body fixed frame



This is a circular stationary orbit, so this is why initially the orbiter seems steady on its initial point in a body fixed frame. After one month without trajectory corrections, the non-symmetric forces of the system (acceleration due to the Sun and mainly the solar pressure) will modify the orbit, so at the end the orbiter will not appear as fixed in the asteroid’s space.

1. Body inertial frame



In this position, the solar pressure will modify the initial orbit such that it will eventually crash the asteroid if no actuations are made. The other 2 perturbing accelerations (asymmetry of the gravitational field and Sun’s presence) have lower order of magnitude.

1. Sun aligned inertial frame



In this position, the presence of the solar pressure will modify less the initial orbit.