Periodic & Quasi-periodic motion in asteroid environments

Motivation

Asteroid exploration missions drive research in long-duration bounded motion

Bounded motion not well studied in high-fidelity polyhedral gravity models

These trajectories serves as choices for early mission design

Objectives

Develop a computational framework for long-duration bounded motion in gravitational environments with polyhedral models

Methodology

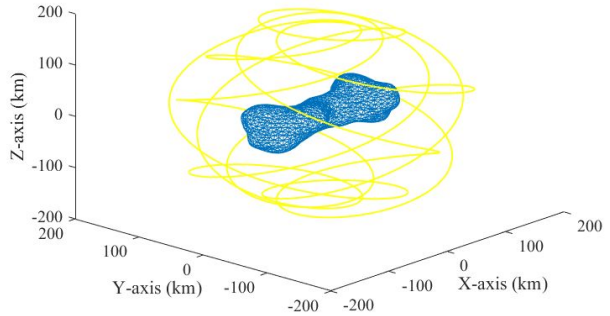
Formulate as continuation of BVP

Use Legendre-Gauss collocation for solution

Compute period-multiplying branches

Results: 216 Kleopatra

A long-duration periodic orbit



A quasi-periodic orbit