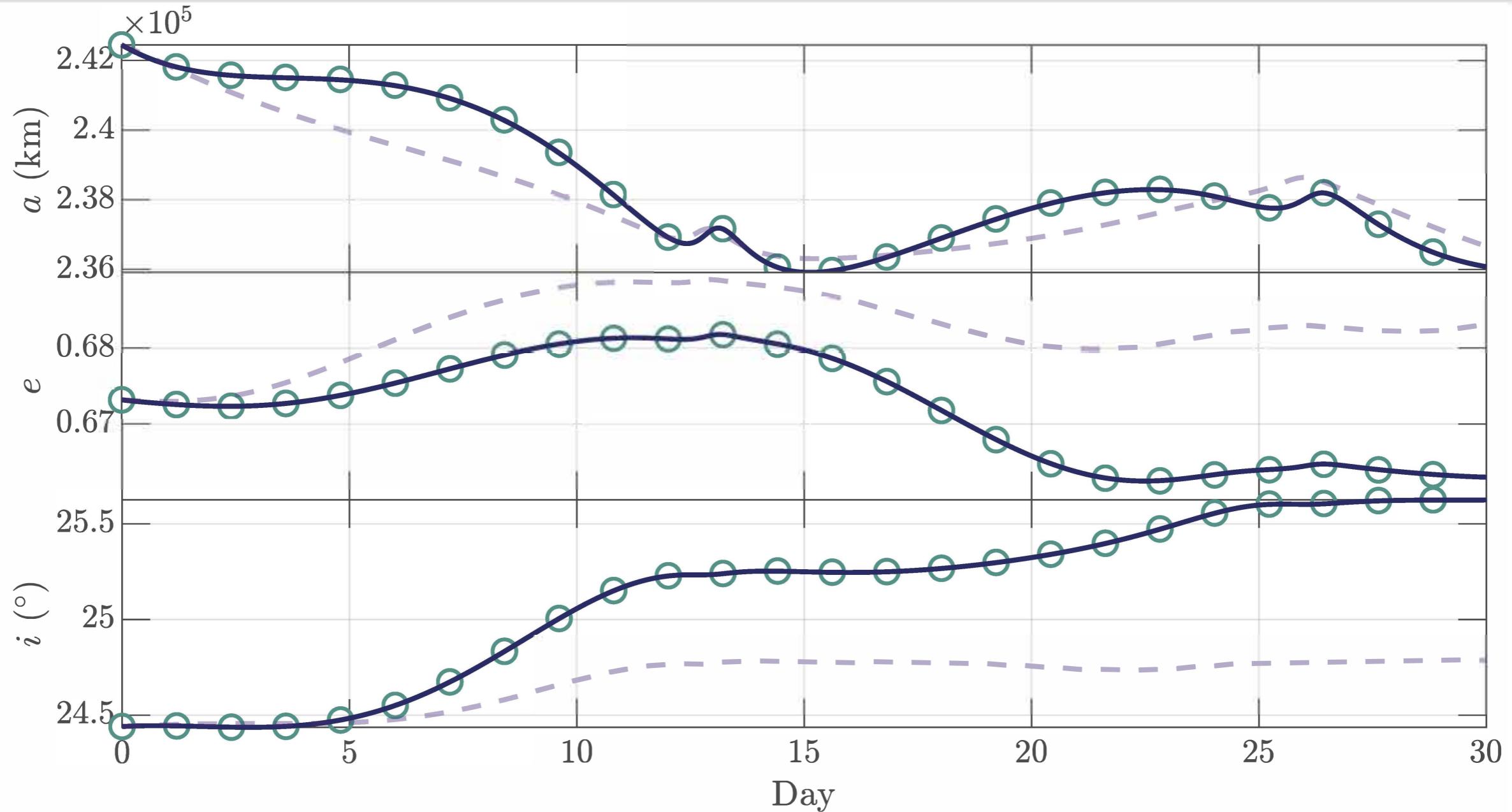




# Cislunar Astrodynamics

## xGEO Orbit Parameterization

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  - “... when orbits are far enough from the Earth to be influenced substantially by the Moon, classical orbital elements and by extension, TLEs, do not help us describe trajectories.” -A Primer on Cislunar Space, Holzinger et al. 2021

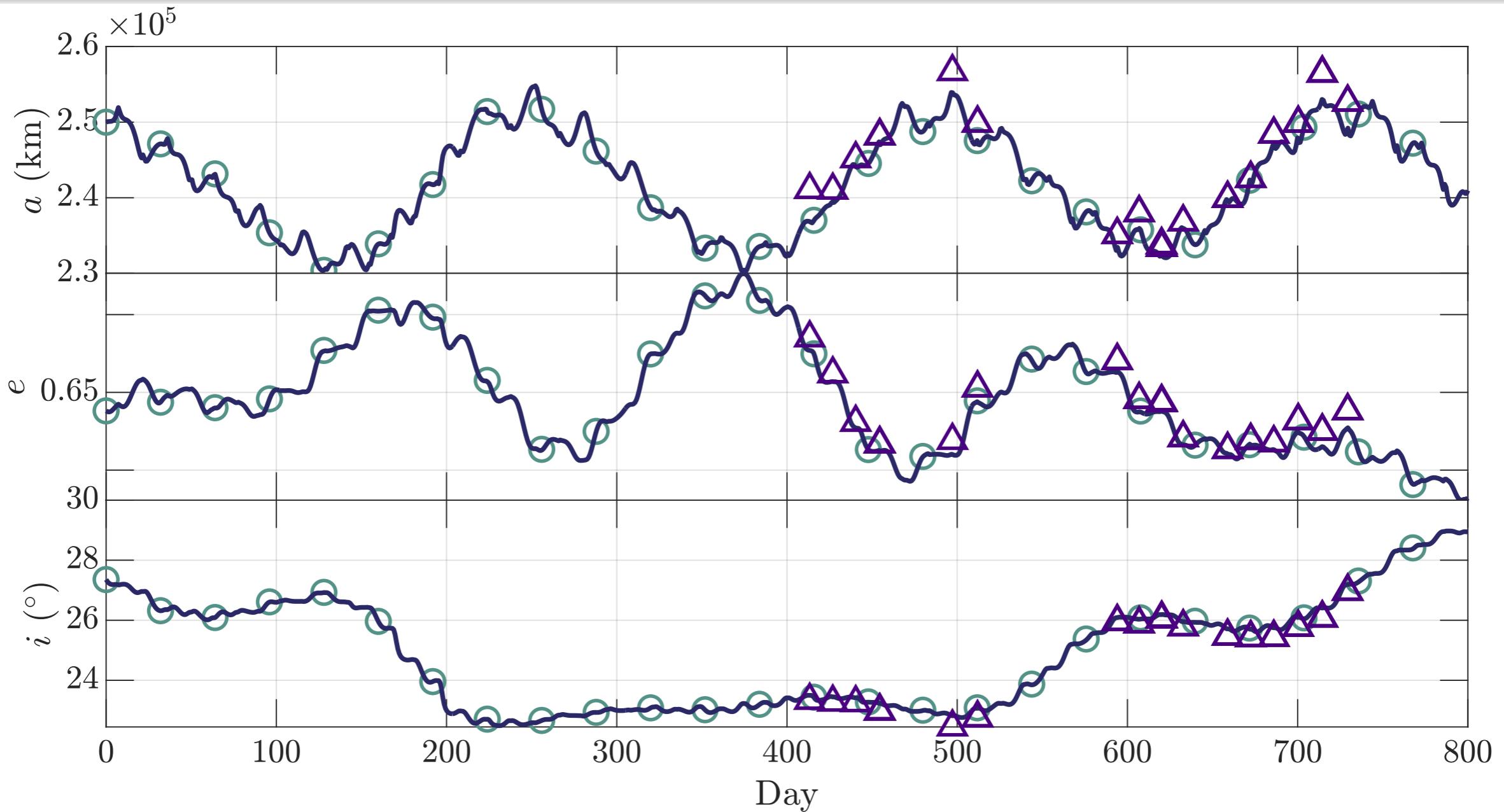




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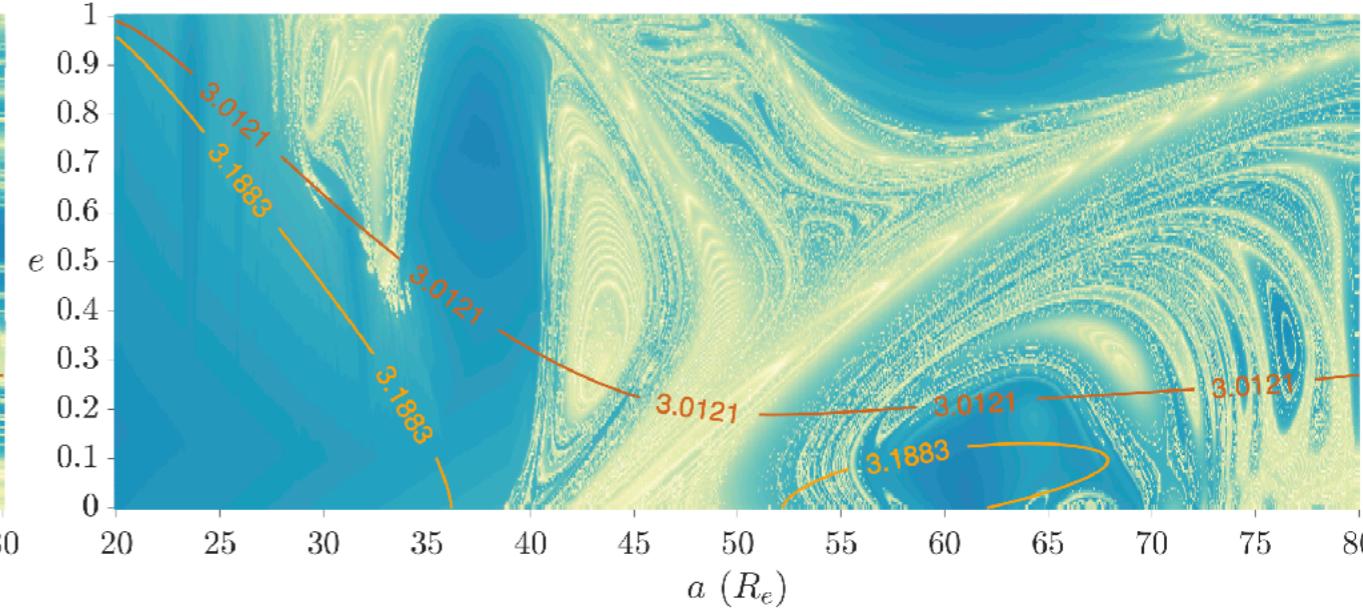
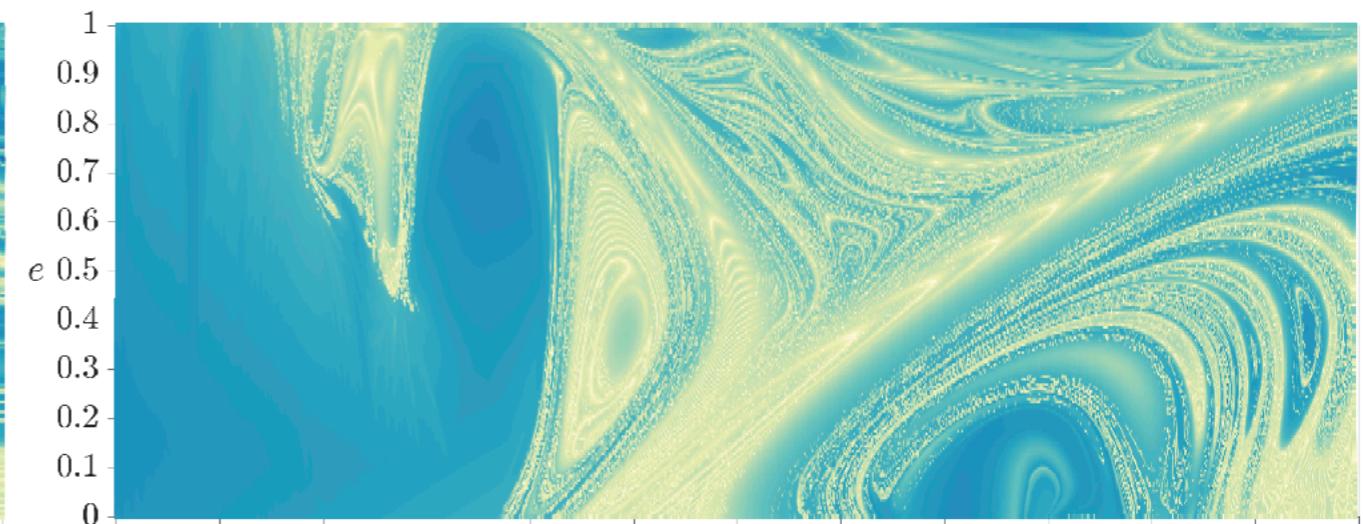
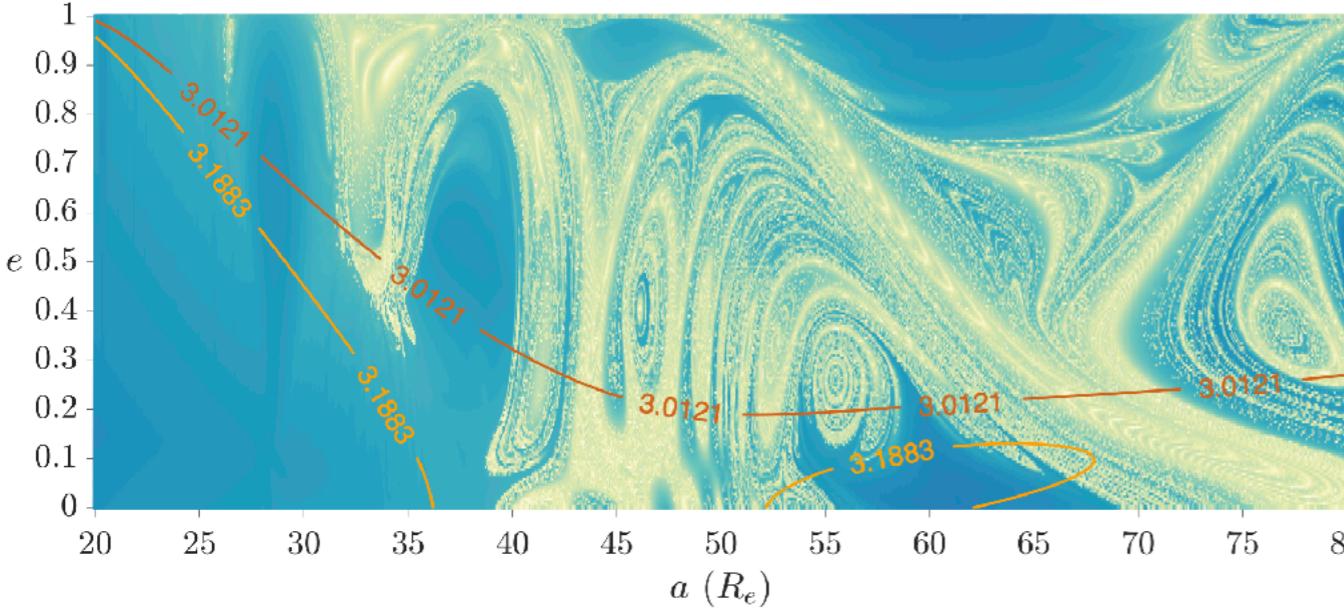
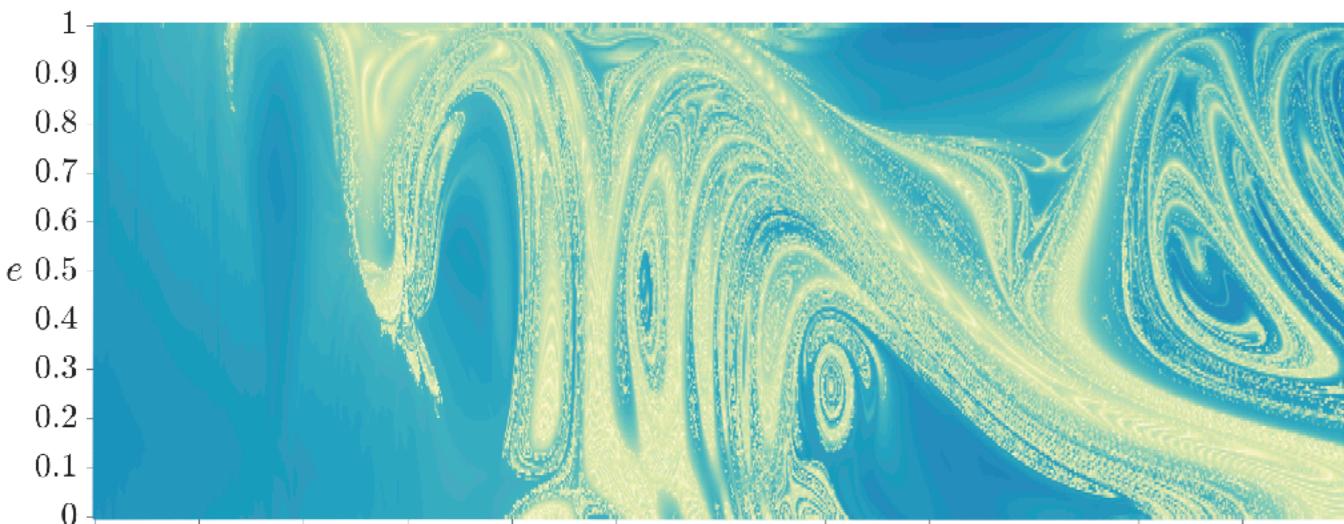




# Dynamical Cartographies

## Manifold Dynamics in Orbital Element Space

- Framework to represent the **Dynamical Sensitivity** of various regimes
  - Geocentric and Selenocentric Orbits (governed by the perturbed two-body problem) and Libration-point Orbits (governed by the restricted three-body problem) can be treated in a holistic fashion





# Dynamical Cartographies

## Global Phase-Space Structures

- xGEO **MISSION ANALYSIS** and **DESIGN** and cislunar SSA (space-based surveillance)
  - Can also be used to locate the orbital resonances that significantly affect the global structure of phase space

