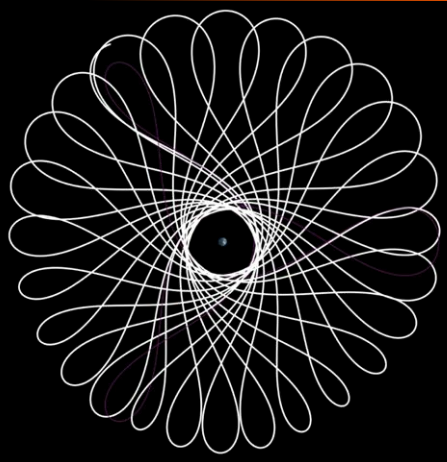
COORBITAL
we orbit differently

pumpkynPIE
TOOLBOX

— CISLUNAR MISSION DESIGN PIPELINE

From exotic orbit families to station-keeping budgets. One product.

pumpkynPIE is the professional workflow behind our cislunar analysis: screen a validated three-body catalog, select a candidate, transition to a high-fidelity ephemeris, and prove long term sustainment.



>70
newly discovered periodic three-body orbit families included in our custom orbit catalog.

<15m/s
annual station-keeping ΔV demonstrated across a multi-year high fidelity simulation window.

INDEPENDENTLY REPRODUCED
reproduced in FreeFlyer by a.i. solutions and research groups in peer reviewed journals.

THE PIPELINE

Six steps that normally take several tools.

CATALOG
query a CR3BP database for DPO, DRO, halo, tulip, pumpkin, etc.

SCREEN
on features such as stability index, Jacobi Constant, Occultation

SELECT
a specific orbit from the family based on desired features

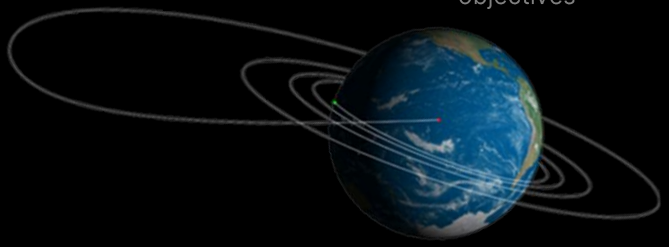
TRANSITION
results from the CR3BP to a high-fidelity ephemeris

SUSTAIN
multi-year station-keeping analysis and produce a ΔV budget

ANALYZE
constellation performance against specific mission objectives

EVERY RUN PROVIDES MISSION INSIGHT

- Orbit type and family
- Maneuver ΔV budget
- Station-keeping Estimates
- Altitude and Range
- Lunar Occultation %
- Surface Coverage
- GDOP



HOW YOU ENGAGE

You run the pipeline. We keep building it.

AVAILABLE NOW -FREE

pumpkyn toolbox

open-source MATLAB suite for CR3BP trajectory design. Validated against NASA code. Verify the physics yourself before you buy.

AVAILABLE SOON – LICENSED

pumpkynPIE

named user seats for your engineers, with technical training and workflow demos built around your mission. Runs inside your organization, with your data.

SCOPED PER ENGAGEMENT

Custom development

new orbit families, metrics, integrations, and data formats built to your requirements. Generally useful capability folds back into the product.

Requires a current MATLAB license. Prefer that we run the analysis? Coorbital Mission architecture services deliver the same pipeline as a fixed-price decision package.

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