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Circular Restricted Three Body Manifold Patching via Koopman Operator Theory

The Koopman operator (KO) is a linear operator that has been used to model nonlinear dynamical systems as global linear frameworks. Applying KO theory to the circular restricted three body problem (CRTBP) presents a new approximation of its' dynamics that can be compared to more traditional CRTBP approximations through the context of manifold patching. Modeling trajectories using the KO framework presents the opportunity to investigate the benefits and detriments of both the framework and the trajectories it models.