Circular, Restricted Three-Body Code

MATLAB-Monkey.com
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Programs:

crtbp.m
- Font-end user interface for the RKN-12/10 integrator. Shows the trajectory of the test particle in an inertial or rotating frame of reference. Has option to animate the dynamics as it integrates. (requires crtbpRKN1210.m , rkn1210.m, and LagrangePoints.m)

Poincare.m
- Calculates and plots a Poincare section using the RK45 integrator. (requires crtbpRK45.m and LagrangePoints.m)

Lyapunov.m
- Calculates the Lyapunov exponent as a function of the time difference Δt. (requires crtbpRKN1210.m, rkn1210.m and LagrangePoints.m)

crtbpPotentialSurface.m
- Renders the crtbp potential as a surface, showing views from two angles. (requires crtbpPotential.m)

crtbpZeroVel.m
- Plots multiple panels showing the zero velocity curves for different values of the Jacobi integral. (requires crtbpPotential.m)

LagrangePlot.m
- Shows the locations of the five Lagrange points as well as the zero velocity curves that go through them. (requires crtbpPotential.m and LagrangePoints.m)

Functions called by the above programs:

crtbpRKN1210.m
- Runge-Kutta-Nystrom $10^{th}/12^{th}$ order integrator for the CRTBP. Integrates single particles or multiple particles simultaneously. (requires rkn1210.m)

rkn1210.m
- Runge-Kutta-Nystrom $10^{th}/12^{th}$ order integrator written by Rody Oldenhuis and available from the MATLAB File exchange.

crtbpRK45.m
- Runge-Kutta $4^{th}/5^{th}$ order integrator for the CRTBP. Integrates single particle only.

crtbpPotential.m
- returns the pseudo-potential at a specified position in the rotating reference frame.

LagrangePoints.m
- returns the coordinates of the Lagrange points for a given value of m2/(m1+m2)