Relativistic Corrections and Chaos in the Three-Body Problem
J.J. CAMPBELL, DAVID NEILSEN, MIRIAM NEUBAUER, DAVID TANNER,
Brigham Young University
— In classical Newtonian gravity, the three-body problem is known to be chaotic for general initial data. We investigate the existence of chaos for the three-body problem in general relativity using the first and second post-Newtonian approximations. Our initial data consists of a third object scattering from a binary pair and are parameterized by an impact parameter and phase angle. The Hamiltonian equations of motion are integrated using geometric methods and we extract gauge-independent quantities at infinity. We present results that characterize chaos in general relativity.

J.J. Campbell
Brigham Young University