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*Escape dynamics in a collinear three-point-mass system*

We present studies concerning the escape mechanism in collinear three-point-mass systems with small-range-repulsive/large-range-attractive pairwise interaction for non-negative energies.

We show that for zero energy, the set initial conditions leading to escape configurations where all three separations infinitely increase, has zero Lebesgue measure. Also, in the case of mass-symmetric systems, we give numerical evidence of the existence of a periodic orbit that is reminiscent of the von Schubart orbit in the collinear three body problem of celestial mechanics. For positive energies, we prove that the set of initial conditions leading to escape configurations has positive Lebesgue measure.

This is joint work with Manuele Santoprete (Wilfrid Laurier) and Danile Pasca (U Oradea, Romania).