Newtonian few-body problem central configurations with gravitational charges of both signs

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The Newtonian n-Body Problem is modified assuming positive inertial masses but different sign for the masses in the interacting force, which is assumed with the possibility of two different signs for the gravitational mass, according to the prescription: two masses with same sign attract one to the other, two masses of different sign repel one to the other. As in electrostatics the signed mass is called charge. The two body problem behaves as the similar Coulomb problem of charged particles in the Bohr model of the atom, where radiation effects are avoided. For two bodies any solution is a central configuration with almost same behavior that the Newton two-body problem. The 3-Body problem was considered without any particular surprise, we have no planar solution, and several different collinear solutions. The four body case of charged central configurations has only the planar [1] and collinear solutions.

References

[1] E. Piña and P. Lonngi *Central configurations of the 4-Body Problem with gravitational charges of both signs*, Qualitative Theory of Dynamical Systems DOI 10.1007/s12346-011-0057-6 (online 2011)