

THREE DIMENSIONAL STABILITY OF A RECTILINEAR PERIODIC
SOLUTION OF THE THREE-BODY PROBLEM, FOR ALL VALUES
OF THE MASSES*

M. HÉNON

Observatoire de Nice

RESUMEN

Consideramos la solución rectilínea, periódica, en donde el cuerpo central choca alternativamente con cada uno de los otros dos cuerpos. Se encuentra que esta solución existe para todos los valores de las tres masas. Se calcula su estabilidad con respecto a perturbaciones tri-dimensionales. Se delimitan los dominios de estabilidad e inestabilidad en un diagrama triangular de masas. Se han encontrado grandes dominios de estabilidad. Esto refuerza la conclusión de que sistemas triples pueden tener un movimiento de tipo "interplay".

ABSTRACT

We consider a rectilinear periodic solution in which the central body collides alternately with each of the two other bodies. This solution is found to exist for all values of the three masses. Its stability with respect to three-dimensional perturbations is computed. Domains of stability and instability are delimited in a triangular mass diagram. Large domains of stability are found. This reinforces the conclusion that triple stars may have an "interplay" type of motion.

DISCUSSION

Evans: I have been greatly educated by these contributions and have been trying to think of ways in which actual systems where spectroscopists are pretty thoroughly tied to a hierarchical concept could be brought to a comparison with the theoretical values.

Abt: Do you know of any observed systems that are members of these families?

Hénon: No, I have not looked into this. In fact, one of my motives for coming to this meeting was to ask the observers whether there are any real systems which could possibly have this kind of motion.

Szebehely: Concerning Dr. Evans' remark, I doubt if the values of k_1 and k_2 may be used to describe classical systems, such as Psi Sagittarii.

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