A question concerning an example in Hertz's mechanics

By **Ludwig Boltzmann** in Vienna.

Translated by D. H. Delphenich

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Obviously, an application of **Hertz**'s mechanics to a special case would be of greatest importance for its understanding. I therefore ask my colleagues to pursue that application to a case in which I was not successful.

A point with a mass of m shall be coupled to a second one of much smaller mass in such a way that the distance between them must remain constantly equal to a. The second point is once more coupled to a third one of mass μ in such a way that the distance between them must once more be equal to a. In the sense of **Hertz**'s mechanics, that is an exhaustive picture of an elastic ball of mass μ and radius ρ that moves inside of a hollow elastic ball of mass m and inner radius r when $2a = r - \rho$.

Find a picture, in the sense of **Hertz**'s mechanics, for two completely-elastic solid balls that can collide according to the ordinary laws; i.e., a point system that is constrained by holonomic or non-holonomic conditions, so by equations (but not inequalities!) between the coordinates and their first derivatives with respect to time that are linear and homogeneous in them, in the event that they include the latter at all. The point-system shall therefore provide a picture of an ordinary, completely-elastic collision.

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