A natural riemannian metric on the space of Keplerian orbits based on the Hausdorff metric

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Abstract. In this talk we consider the question about existence of a natural riemannian metric in the space of Keplerian orbits. In the works of the author and Kholshevnikov [1,2,3], a discussion of various issues of the geometry of the space of Keplerian orbits was initiated. In particular, we have proposed a whole class of natural metrics in this space. We also discussed the construction of riemannian metrics. Such a riemannian metric in the space of energetically bounded orbits was constructed in 2010 by J.Maruskin. [4]. However, his construction depends on the choice of a specific Keplerian element system. Here we propose an approach that is free from this disadvantage. Our approach is based on the Hausdorff distance between the Keplerian orbits. Finally we discuss a geodesic flow on the space of orbits generated be the riemannian metric we constructed in terms of classical orbital elements.

References

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