

Proof of a conjecture by H. Dullin and R. Montgomery

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Abstract. In the framework of the planar Euler problem in the quasi-periodic regime, the formulae of the periods available in the literature are simple only on one side of their singularity. In this paper, we complement such formulae with other ones, which result simpler on the other side. The derivation of such new formulae uses the Keplerian limit and complex analysis tools. As an application, we prove a conjecture by H. Dullin and R. Montgomery, which states that such periods, as well as their ratio, the *rotation number*, are monotone functions of their non-trivial first integral, at any fixed energy level.

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