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The chaotic solar system

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Abstract

In this review talk we will first give a definition of chaos with some simple well known examples. Then we will discuss gravitation in the classical and relativistic case. What is the consequence of the gravitational law on the motions of the objects in the solar system? The solar system is very well explored and many peculiarities of motion of objects have been found. We will discuss a few of them. A question that was posed already more than 100 years ago is how stable the solar system really is. Can we apply modern numerical simulations to solve such questions? A short outlook to exoplanetary systems concerning chaotic behavior will be given at the end of the talk.