Nonlinear Sciences > Chaotic Dynamics

Geometrical origin of chaoticity in the bouncing ball billiard

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We present a study of the chaotic behavior of the bouncing ball billiard. The work is realised on the purpose of finding at least certain causes of separation of the neighbouring trajectories. Having in view the geometrical construction of the system, we report a clear origin of chaoticity of the bouncing ball billiard. By this we claim that in case when the floor is made of arc of circles - in a certain interval of frequencies - a lower bound for the maximal Ljapunov can be evaluated by semianalitical techniques.

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