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We consider the motion of a ball bouncing elastically between a wall that oscillates periodically and a fixed wall, both of them having infinite mass. It is well known that if the trajectory of the wall is smooth then the system is close to integrable at infinity and so invariant curves prevent the ball from accelerating indefinitely. On the other hand if the motion of the wall is only piecewise smooth as in original Ulam experiment then dynamics can be much more complicated. We present some theoretical and numerical results about this problem and describe other piecewise smooth systems with a similar behavior.

- [1] Jacopo de Simoi, Dmitry Dolgopyat, *Dynamics of some piecewise smooth Fermi-Ulam Models*, to appear in *Chaos*.