1099-37-260   **Jacopo De Simoi*** (`jacopods@math.utoronto.ca`), Department of Mathematics, University of Toronto, 40 St George St, Toronto, Ontario M5S 2E4, Canada. *Dynamics of piecewise smooth Fermi–Ulam models.*

Fermi–Ulam models are simple one-and-a-half degree of freedom mechanical systems which describe the dynamics of a ball bouncing freely between two oscillating walls. KAM theory implies, if the motion of the walls is sufficiently smooth, existence of invariant tori which prevent any form of diffusion to high energies. In a joint ongoing project with D. Dolgopyat we describe the dynamics of such systems assuming only piecewise smoothness of the wall motions. We are able to give an essentially complete description of the high energy dynamics which turns out to be either hyperbolic (i.e. diffusive) or dominated by elliptic islands. Time permitting I will also explain some work in progress regarding so-called dispersing Fermi–Ulam models and our strategy to attack the problem of ergodicity of this and related models. (Received February 10, 2014)

1