

1106-37-1408

Nandor J Simanyi* (simanyi@uab.edu), Campbell Hall, 1300 University Boulevard,
Birmingham, AL 35294-1170. *Wojtkowski's Falling Balls Revisited*. Preliminary report.

In around 1990 M. P. Wojtkowski introduced the following intriguing Hamiltonian dynamical system: He considered the system of n (≥ 2) point masses m_1, \dots, m_n falling freely in the vertical half line $\{q \mid q \geq 0\}$ (so that $0 \leq q_1 \leq q_2 \leq \dots \leq q_n$) under constant gravitation and colliding with each other and the solid floor $q = 0$ elastically. In order to have a natural, invariant symplectic cone system, we assume that $m_1 \geq \dots \geq m_n$ (i. e. the masses do not increase as we go up), but not all masses are equal. One is interested the ergodic properties, like hyperbolicity, ergodicity, mixing, etc of such systems. We survey the existing results, pose some challenging open questions, and sketch a roadmap for proving ergodicity of such systems with $m_1 > m_2$. (Received September 12, 2014)