Can hyperbolicity of hard balls prevail over focusing boundary? (Michel Herman's problem)

Michel Herman had kept asking me the following question since 1996.

Consider a system of N hard balls of radii R and of mass 1 in a fixed strictly convex, compact domain A of $\mathbb{R}^\nu$ ($\nu \geq 2$) in equilibrium. One, of course,assumes $R < R_0(A, N)$ to ensure that there be room in A to contain N disjoint balls of radii R.

Problem Does there exist an N_0 such that for any $N \geq N_0$ there exists an $R_1(A, N) > 0$ such that the system of N balls of radii $R \leq R_1(A, N)$ in A is ergodic? Herman

conjectured the statement to be true by expecting that the hyperbolicity generated by the collisions of the balls overcomes the focusing effect of the boundary of A.

Discussion: Almost no explanation is needed. In a toric vessel or in a rectangular one, too, systems of any number of hard balls are expected to be hyperbolic. Most likely their hyperbolicity prevails over the focusing effect of the boundary, unless there is a stable periodic orbit. Michel Herman was guessing, that under the conditions formulated above, no such orbit can occur.