

# **Billiards are forever**

**Marcel Berger**

(IHÉS - Bures-sur-Yvette)

Dedicated to 60th birthday of Sylvestre Gallot

A billiard in a plane domain is the dynamical system obtained as follows: a point moves in the domain following a straight lines, but when it hits the boundary it starts back in a way that the two angles of incidence are equal. What is the long time behavior of this system ? Billiards are basic models in the theory of dynamical systems, because of their (apparent) geometric simplicity. But despite a lot of deep works and strong results, they still offer many challenging natural questions. We will make a brief tour of tools, results and open problems.