On the integrability properties of discrete systems

Claude-Michel Viallet *

viallet@lpthe.jussieu.fr

I will present some of the fundamental features of discrete-time systems, namely Symmetries, Singularities, and Complexity. They all have a relation to the integrability of such systems, and I will describe to what extent they can be used as characterising this integrability. The class of discrete time evolutions we will consider is by rational transformations, and this allows us to use some of the powerful tools of algebraic geometry, of which I will give a glimpse.

*Laboratoire de Phyique. Théorique et Haute Energie (LPTHE), CNRS, Sorbonne Université, 4 Place Jussieu, TOUR 13, 4ieme Etage, F-75005 Paris, FRANCE