
Rare event simulations in climate dynamics, turbulent flows and astronomy

Freddy Bouchet*¹

¹Laboratoire de Physique de l'ENS Lyon (Phys-ENS) – CNRS : UMR5672, École Normale Supérieure
(ENS) - Lyon – 46 allée d'Italie 69007 Lyon, France

Abstract

During this talk I will review the use of rare event algorithms for complex dynamics, with a large number of degrees of freedom. Using rare event algorithms, we have studied events that could not be studied otherwise: extreme events in climate dynamics, rare transitions in turbulent flows and atmosphere jet dynamics, and the probability of the destabilization of the solar system. Most of the talk will be devoted to applications for extreme heat waves using climate models. Using rare event algorithms, we will study their dynamics and probabilities.

Keywords: Rare event algorithms, climate dynamics, extremes, turbulent flows

*Speaker