**ABSTRACT OF THE TALK**

I will first start with a general introduction on theoretical ecology, stressing the reasons that make connections with statistical physics interesting and timely. I will then focus on Lotka-Volterra equations, which provide a general model to study large assemblies of strongly interacting degrees of freedom in many different fields: biology, economy and in particular ecology. I will present our analysis of Lotka-Volterra equations as model of ecosystems formed by a large number of species and show the different phases that emerge. Two of them are particularly interesting: when interactions are symmetric we find a regime characterized by an exponential number of multiple equilibria, all poised at the edge of stability for a large number of species. For non-symmetric interactions, this phase is replaced by a chaotic one. I will then conclude discussing relationships with experiments and general consequences of our works.

**BIOGRAPHY**

Giulio Biroli is Research Director at the Institute for Theoretical Physics of CEA Saclay and Professor associated to the Physics Department of the Ecole Normale Supérieure. He received his Ph.D. in Theoretical Physics in 2000 from the Ecole Normale Supérieure in Paris and was a Postdoctoral Fellow at Rutgers University from 2000 to 2002. In 2002 he joined the Institute for Theoretical Physics of CEA Saclay. From 2011 until 2015 he was Professor associated at the Ecole Polytechnique (Palaiseau).