

1138-35-111

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Université de Bordeaux, 351 cours de la libération, 33400 Talence, France. *Epidemic Mathematical
SIR Models: Analysis and Comparison with Data.*

In the first part of this presentation we will consider SIR epidemic models without entering flux of individuals. For the single group case, we will discuss the comparison of the with real data. Therefore we will identify the parameter of the system as well as the initial value of the system. We will note that our analysis is strongly based on the computation of the final size for the SIR model with classical mass action law. Therefore the similar question are still fully open for a general non-linear functional response.

Next, we will discuss SIR epidemic with multiple groups. The main question addressed in our the computation of the final size of the epidemic. We will also discuss the asymptotic behavior, and we will apply the results to the SARS epidemic in Singapore in 2003, where it is shown that the two-peak evolution of the infected population can be attributed to a two-group formulation of transmission.

In the last part of the presentation we will consider the spreading of influenza in Puerto-Rico. The goal of this last part is to incorporate data structured by city and to connect the data with the spreading of pathogen locally in space. (Received February 05, 2018)