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EPIDEMICS DYNAMICS IN A CITY: A NETWORK MODEL AND SEASON VARIATIONS

We are considering a model for dengue epidemics spreading in a densely populated town, where people move daily from one neighborhood to another. For this purpose we consider a network generalization of SIR model with and without birth and death. We are particularly interested in understanding how the geometry of the network, its homogeneity or non-homogeneity, the flux of people and a possible seasonal periodicity of climate have an effect in the occurrence of an epidemics.

[Lucas Stolerman, Stefanella Boatto and Daniel Coombs, "Epidemics Dynamics: the basic Reproduction Number Ro for the SIR-Network Model" (2013); Lucas Stolerman, Master thesis, Um Modelo em Rede para a dinamica de uma epidemiaem uma cidade' (2012);Bacaer and Gomez, On the final size of epidemics with seasonality', Bulletin of Mathematical Biology, 71 : 1954-1966 (2009); Howard Weiss, A Mathematical Introduction to Population Dynamics', IMPA (2009);]