

**Synchronization and chaos in a multi-strain age-structured epidemic model**

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Dengue fever is a mosquito-borne viral disease affecting up to 100 million people worldwide and causing tens of thousands of deaths in the developing world. There are four distinct serotypes of this disease simultaneously circulating in population, and their complex interactions produce various temporal patterns of disease outbreaks.

In this work we concentrate on the antibody-dependent enhancement (ADE) that leads to an increased transmissibility of secondary infections. Another important aspect taken into account is the detailed age distribution of individuals in the endemic region. We show how depending on the values of ADE coefficient and the background force of infection the dynamics of different strains can exhibit periodic or chaotic behaviour with windows of intermittent synchronization and alternating clustering.