CIDMA CENTRO DE I&D EM MATEMÁTICA E APLICAÇÕES
CENTER FOR R&D IN MATHEMATICS AND APPLICATIONS

Systems and Control Group Webinar

May 16, 2025, 14h30

Mathematics Department, University of Aveiro

Online session: https://videoconf-colibri.zoom.us/j/95671422520

ID da reunião: 956 7142 2520

Senha de acesso: 610151

Patterns of dengue and SARS-CoV-2 coinfection

Carla Pinto

P. PORTO - School of Engineering & CIDMA - University of Aveiro

cap.isep@gmail.com

Abstract

This webinar introduces a nonlinear ordinary differential equation model to describe the co-dynamics of dengue and COVID-19 in a susceptible population. It is derived the basic reproduction number, analyzed the long-term behavior, and assessed parameter sensitivity. A stochastic Itô formulation and numerical simulations further generalize the model. Using Colombian data, we validate the model via global and staged fitting, noting challenges such as parameter unidentifiability and data scarcity. Parameter fixing simplified optimization but limits interpretability.

This seminar was supported by Portuguese funds through the CIDMA - Center for Research and Development in Mathematics and Applications, under the FCT Multi-Annual Financing Program for R&D Units.

fct Fundação para a Ciência e a Tecnologia

REPÚBLICA PORTUGUESA