Monday 7 June 2021 – at 3.30 pm

The event will take place online through the ZOOM platform.
To get the access codes please contact the secretary office.

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Deterministic and stochastic host-vector models: West Nile virus

Abstract:
A modification of the classical S-I R Ross model will be presented to analyse the dynamics of infections from West-Nile virus, assuming that populations can also born and die. A threshold condition based on the basic reproduction number $R_0$ will be derived and the stability of the equilibria will be studied.

Then the related stochastic model will be presented, and it will be shown how persistence of disease in stochastic models is not guaranteed by having $R_0 > 1$. The theory of branching process will be used to approximate the probability of extinction or of an outbreak, [9, 11]. The results will then be extended to the heterogeneous case. Finally, the results obtained will be confirmed by different numerical experiments.

Contact person: Andrea Pugliese

The seminar corresponds to the final exam of Mathematical Models for Epidemics, a planned course within Ferrarese’s  first year PHD study programme