

## Continuous population models with diffusion and nonlinear reactions of logistic type

In this opportunity, we will discuss continuous population models using differential equations depending on time and space variable. Starting from ODEs and passing by PDEs we will arrive in nonlocal models which have been consider as an effective option to model these problems specially when human mobility needs to be taken into account. At the first class we will talk about the single species models which means population models given by scalar equations. In the second and last class we will go from single species to two or more considering systems of differential equations.

### Referencies:

- [1] Murray, J. D.; *Mathematical Biology*, Springer-Verlag, New York. 1989.
- [2] Cosner, C.; *Reaction–Diffusion Equations and Ecological Modeling. Tutorials in Mathematical Biosciences IV*, Springer-Verlag Berlin Heidelberg (2008) 77-116.
- [3] Hutson, V.; Martinez, S.; Mischaikow, K.; Vickers, G. T.; The evolution of dispersal, *J. Math. Biology* 47 (2003) 483-517.
- [4] Bai, X.; Li, F.; Classification of global dynamics of competition models with nonlocal dispersals I: symmetric kernels, *Calculus of Variations* 54:144 (2018).