

Integration of Ordinary Differential Equations

- [Ordinary Differential Equations \(ODE, ODEs\)](#)
- [Numerical methods for ordinary differential equations](#)
 - [Euler method](#)
 - [Runge-Kutta methods](#)
 - « most widely known member of the Runge-Kutta family is generally referred to as “RK4”, “classical Runge-Kutta method” or simply as “the Runge-Kutta method »
 - [Adaptative stepsize control for Runge-Kutta methods](#)
 - [Predictor-corrector method](#)
 - [Richardson extrapolation](#)

applications

- chemical kinetics
- population dynamics, [Logistic function](#) (and equation)
 - [Pierre François Verhulst](#) model and non-linearity
- bifurcation, period doubling and routes to chaos
- Oscillating chemical reactions : Belousov-Zhabotinsky, Brusselator, Oregonator
- [Lotka-Volterra equations](#) (predator-prey equations)
- [Lorenz system](#)
- [Strange attractor](#)

Références

- Numerical recipes, The Art of Scientific Computing 3rd Edition, William H. Press, Saul A. Teukolsky, William T. Vetterling, Brian P. Flannery, 2007, isbn: 9780521880688
 - <http://numerical.recipes/>
 - http://www2.units.it/ipl/students_area/imm2/files/Numerical_Recipes.pdf, p 707...
 - <http://apps.nrbook.com/empanel/index.html#>

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Last update: **2016/12/05 16:27**

