Catalogue des intégrateurs d'ODE les plus courants.

L'ordre de l'intégrateur est entre parenthèses

Euler explicite (1)	$U_{n+1} = U_n + dt \cdot f(t_n, U_n)$
Euler implicite (1)	$U_{n+1} = U_n + dt \cdot f(t_{n+1}, U_{n+1})$
Leap Frog (2)	$U_{n+1} = U_{n-1} + 2dt \cdot f(t_n, U_n)$
Euler modifié (2)	$U_{n+1} = U_n + dt \cdot f\left(t_n + \frac{dt}{2}, U_n + \frac{dt}{2} f(t_n, U_n)\right)$
Cranck Nicholson(2)	$U_{n+1} = U_n + \frac{dt}{2} \cdot \left(f(t_n, U_n) + f(t_{n+1}, U_{n+1})\right)$
Adam Bashfort (2)	$U_{n+1} = U_n + dt \cdot \left(\frac{3}{2} f(t_n, U_n) - \frac{1}{2} f(t_{n-1}, U_{n-1})\right)$
Adam Bashfort (3)	$U_{n+1} = U_n + dt \cdot \left(\frac{23}{12} f(t_n, U_n) - \frac{16}{12} f(t_{n-1}, U_{n-1}) + \frac{5}{12} f(t_{n-2}, U_{n-2})\right)$
Adam Moulton (3)	$U_{n+1} = U_n + dt \cdot \left(\frac{5}{12} f(t_{n+1}, U_{n+1}) + \frac{8}{12} f(t_n, U_n) - \frac{1}{12} f(t_{n-1}, U_{n-1})\right)$

Runge Kutta (3)

$$\begin{cases} k_1 = dt \cdot f(t_n, U_n) \\ k_2 = dt \cdot f(t_n + dt, U_n + k1) \\ U_{n+1} = U_n + \frac{1}{2}(k_1 + k_2) \end{cases}$$

Runge Kutta (4)

$$\begin{cases} k_1 = dt \cdot f(t_n, U_n) \\ k_2 = dt \cdot f(t_n + \frac{dt}{2}, U_n + \frac{k_1}{2}) \\ k_3 = dt \cdot f(t_n + \frac{dt}{2}, U_n + \frac{k_2}{2}) \\ k_4 = dt \cdot f(t_n + dt, U_n + k_3) \\ U_{n+1} = U_n + \frac{1}{6}(k_1 + 2k_2 + 2k_3 + k_4) \end{cases}$$