Tabla de esquemas temporales

Para ecuaciones diferenciales de la forma $\dfrac{dq}{dt} = f(q,t)$

$$\frac{q^{n+1} - q^{n-m}}{(m+1)\Delta t} = \beta f^{n+1} + \alpha_n f^n + \alpha_{n-1} f^{n-1} + \cdots + \alpha_{n-l} f^{n-l}$$
$$= \beta f^{n+1} + \sum_{i=0}^{l} \alpha_{n-i} f^{n-i}$$

con $f^n = f(q^n, t^n) = \frac{dq}{dt}(q^n, t^t)$.

Método	**m**	**l**	$\boldsymbol{\beta}$	$\boldsymbol{\alpha}$	**Tipo**	**Error**	**Expresión**
Euler	0	0	0	$\alpha_n = 1$	Explícito	$O(\Delta t)$	$q^{n+1} = q^n + f^n \Delta t$
Atrasado	0	0	1	$\alpha_n = 0$	Implícito	$O(\Delta t)$	$q^{n+1} = q^n + f^{n+1} \Delta t$
Trapezoidal	0	0	$\frac{1}{2}$	$\alpha_n = \frac{1}{2}$	Implícito	$O(\Delta t^2)$	$q^{n+1} = q^n + \frac{\Delta t}{2}(f^{n+1} + f^n)$
Euler Atrasado o Matsuno	0	0	1	$\alpha_n = 0$	Iterativo	$O(\Delta t)$	$q^{n+1} = q^n + f(q^n + f^n \Delta t)\Delta t$
Heun	0	0	$\frac{1}{2}$	$\alpha_n = \frac{1}{2}$	Iterativo	$O(\Delta t^2)$	$q^{n+1} = q^n + \frac{\Delta t}{2}[f(q^n + f^n \Delta t) + f^n]$
Leapfrog	1	0	0	$\alpha_n = 1$	Explícito	$O(\Delta t^4)$	$q^{n+1} = q^{n-1} + 2 f^n \Delta t$
Adams–Bashforth	0	1	0	$\alpha_n = \frac{3}{2}$ $\alpha_{n-1} = -\frac{1}{2}$	Explícito	$O(\Delta t^2)$	$q^{n+1} = q^n + \frac{\Delta t}{2}(3 f^n + f^{n-1})$