2.4.9 Beam-Warming scheme

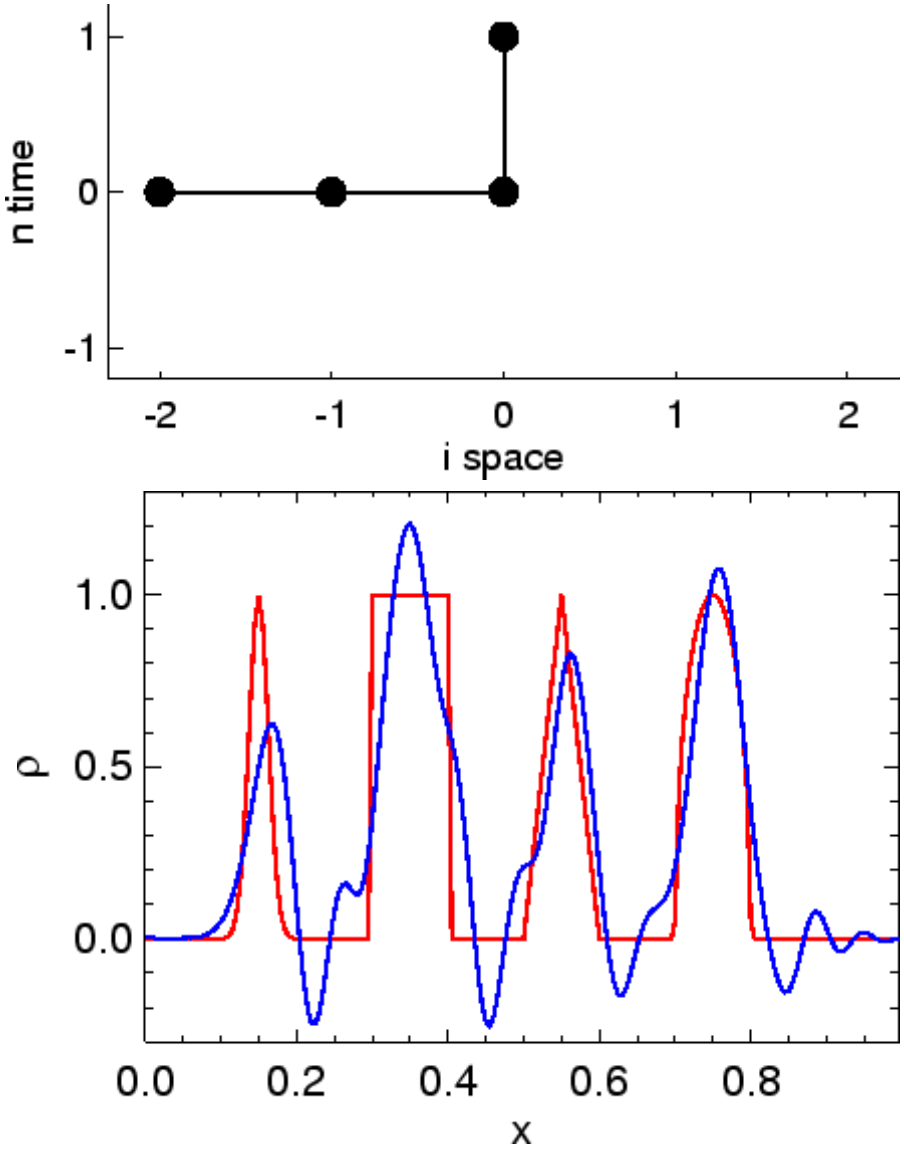

Figure 16: Stencil and example for Beam-Warming scheme.

Figure 16: Beam-Warming scheme is $O(\Delta x^2, \Delta t^2)$ with flux

$$f^n_{i+\frac{1}{2}} = \tfrac{1}{2}\left[3f(\rho^n_i) - f\left(\rho^n_{i-1}\right)\right] - \tfrac{1}{2}\tfrac{v^2\Delta t}{\Delta x}\left[\rho^n_i - \rho^n_{i-1}\right] \quad . \qquad (117)$$

The result is smooth with considerable overshoot (that does not much grow with time anymore). This second order scheme might be useful for more regular initial conditions.