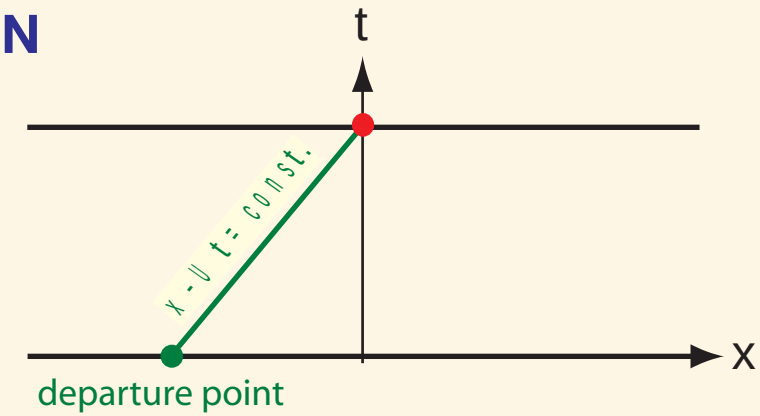
MOTIVATION

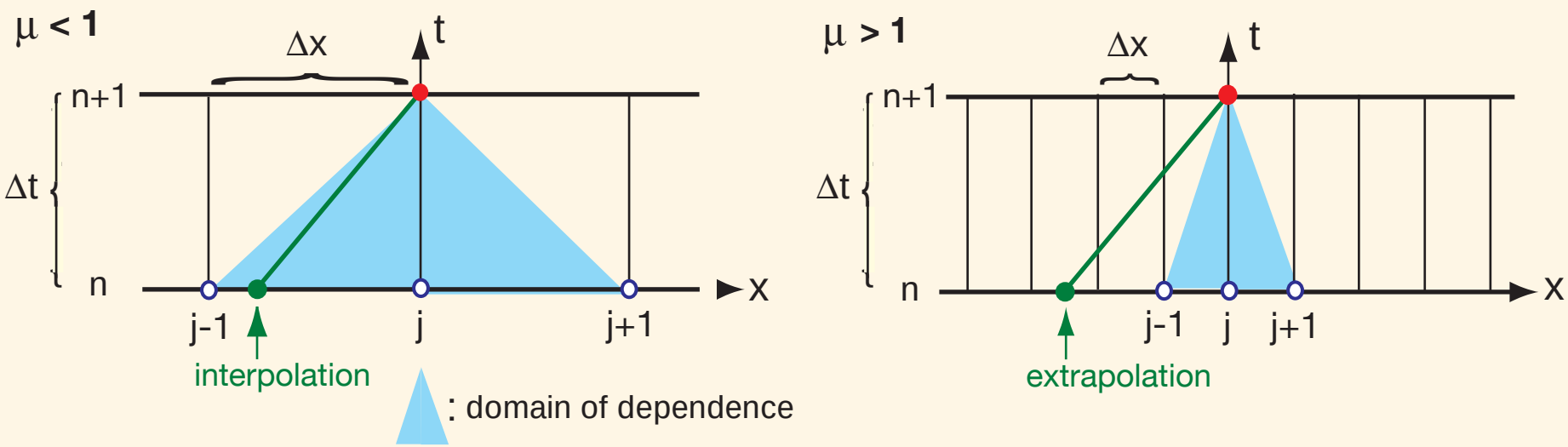
LINEAR ADVECTION EQUATION

$$\boxed{\frac{\partial h}{\partial t} + U\frac{\partial h}{\partial x} = 0}$$



Euler (space-centered forward) scheme:

$$h_j^{n+1} = h_j^n - \frac{\mu}{2}\left(h_{j+1}^n - h_{j-1}^n\right), \text{ where } \mu \equiv U\Delta t / \Delta x.$$



A necessary condition for stability and convergence:
the departure point be within the domain of dependence.