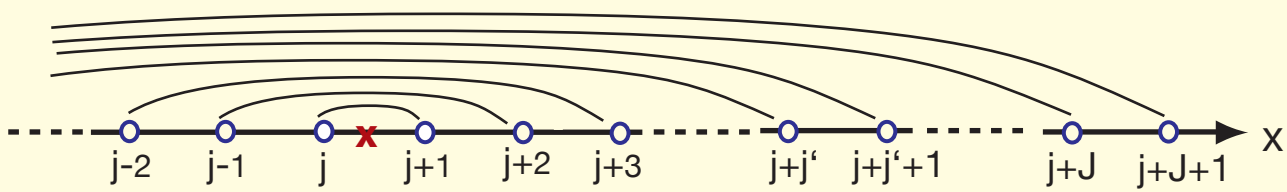
When centered, $a_{-j'} = a_{j'}$

$$\left(\frac{\partial h}{\partial x}\right)_{j+1/2} \Rightarrow \frac{1}{\Delta x}\left[a_0\left(h_{j+1} - u_j\right) + \sum_{j'=1}^{J} a_{j'}\left[\left(h_{j+j'+1} - h_{j+j'}\right) + \left(h_{j-j'+1} - h_{j-j'}\right)\right]\right]$$

This is equivalent to a multi-point centered difference scheme

$$\left(\frac{\partial h}{\partial x}\right)_{j+1/2} \Rightarrow \frac{1}{\Delta x}\sum_{j'=0}^{J} b_{j'}\left(h_{j+j'+1} - h_{j-j'}\right) \text{ , where } b_{j'} \equiv a_{j'} - a_{j'+1}$$

with $a_{J+1} \equiv 0$