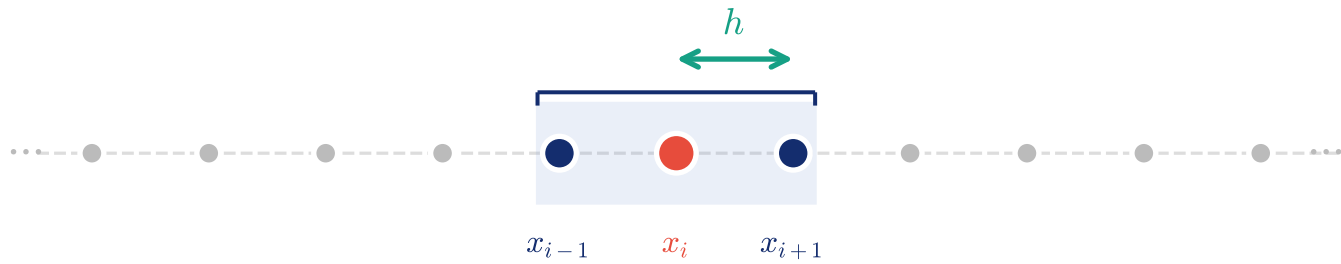
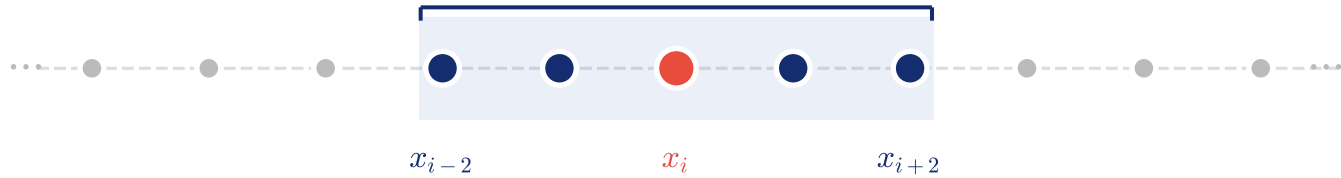


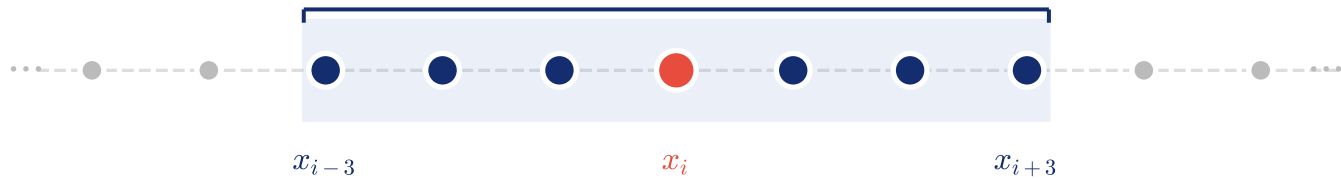
# Finite Difference Stencils: From Local to Global



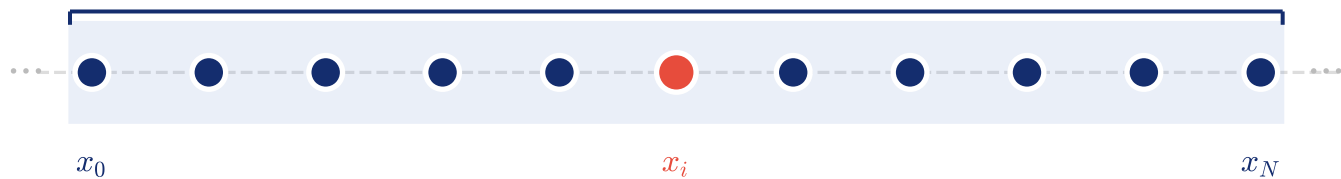
**2nd order FD (3 points)**



**4th order FD (5 points)**



**6th order FD (7 points)**



**Spectral (all points)**

*As stencil width increases, accuracy improves. The spectral method is the limit: all nodes contribute to  $u'(x_i)$ .*