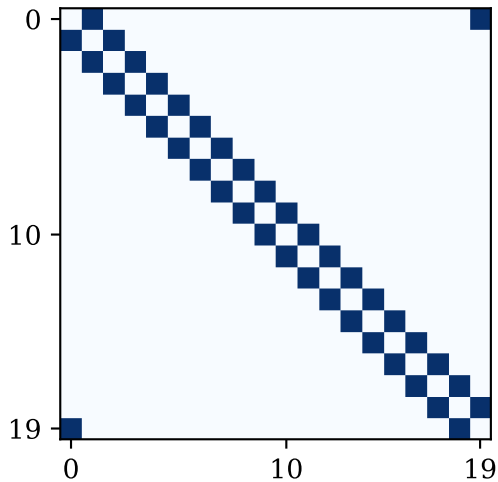


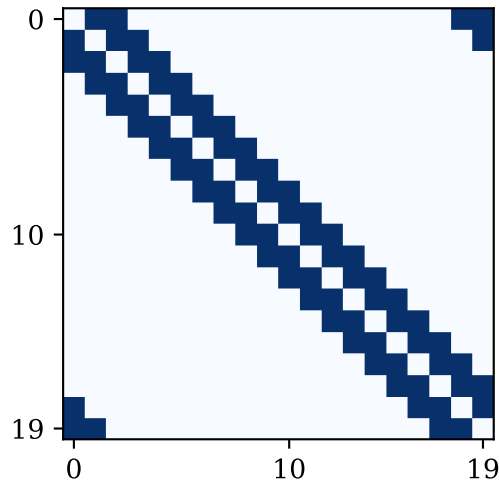
Finite Difference Matrix Sparsity: From Local to Global

2nd Order FD



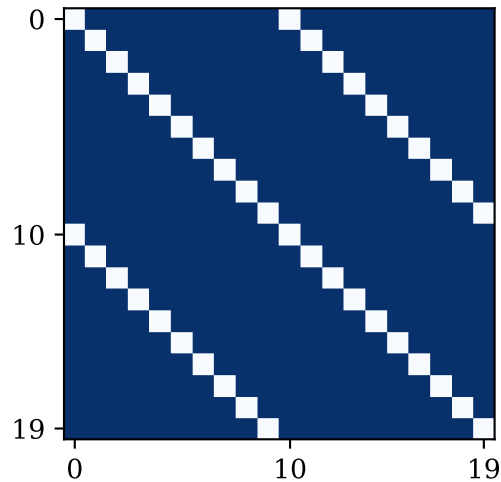
Column index j
Bandwidth = 3

4th Order FD



Column index j
Bandwidth = 5

Spectral



Column index j
Dense ($N \times N$)