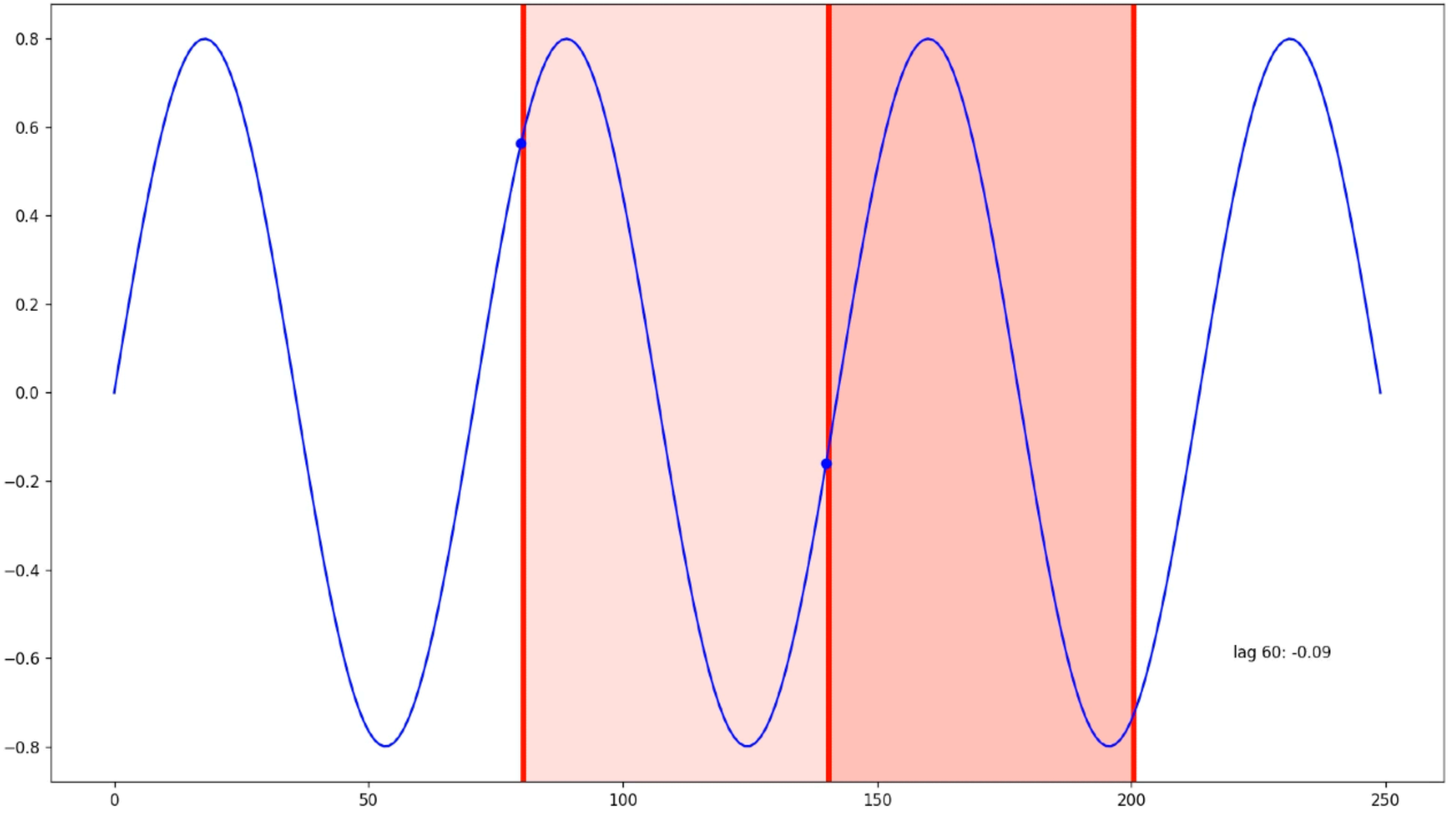
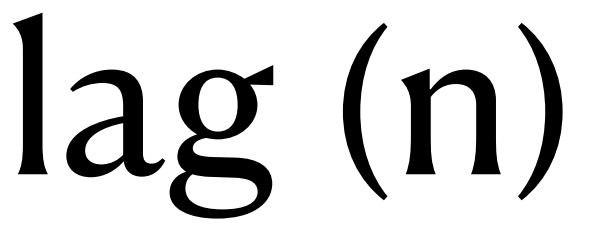

0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
−0.8
0
50
100
150
200
250
lag 60: -0.09

Auto-correlation

i=200

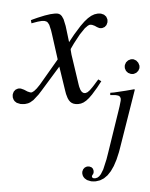
(Current time)

$2 \times lag$


lag (n)

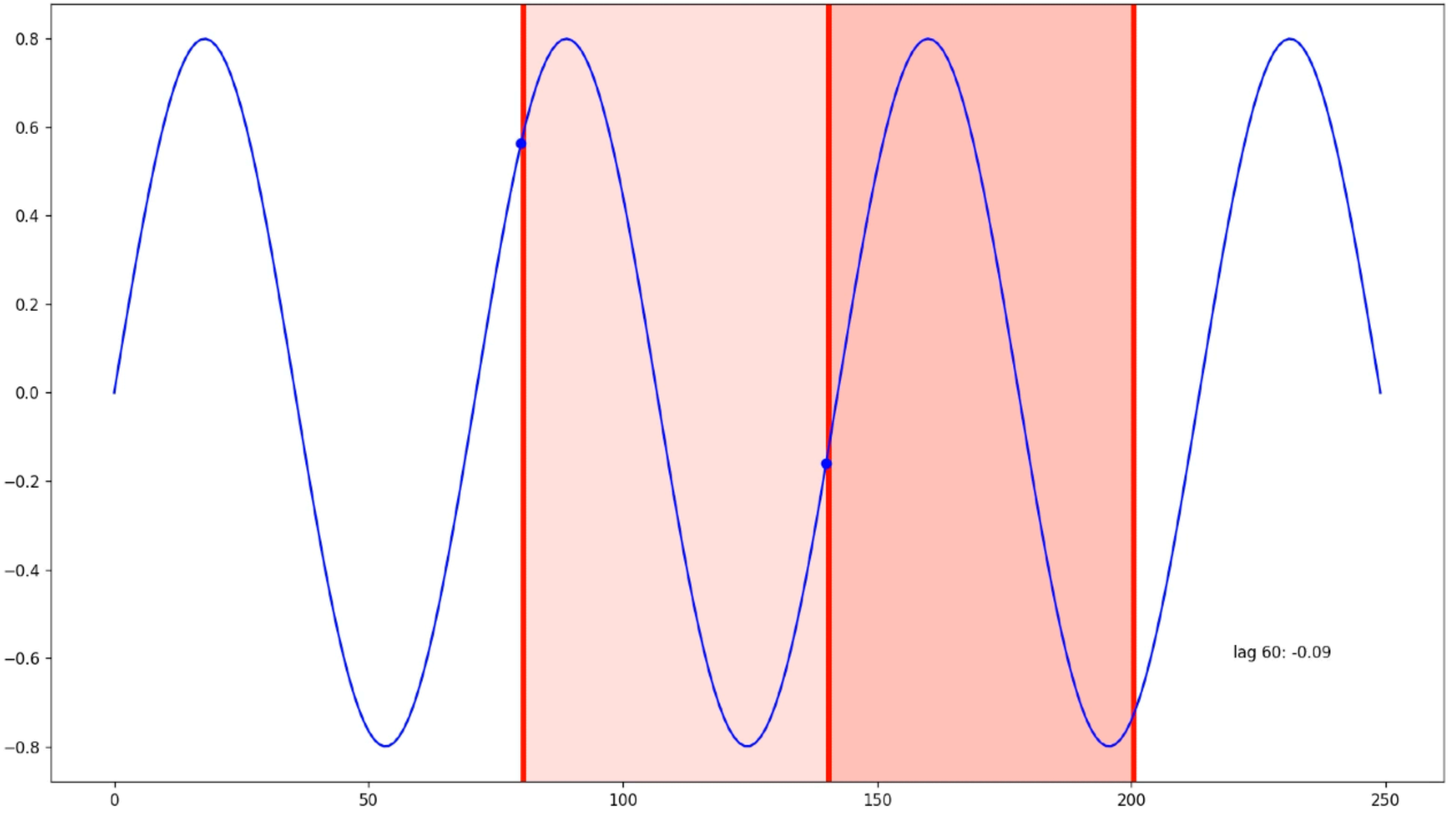
Specifically, at time, i, given a sequence of sampled data, $\{x_j\}$, of a waveform of period L for j=0, . . . , i, the auto-correlation as a function of lag n can be expressed,

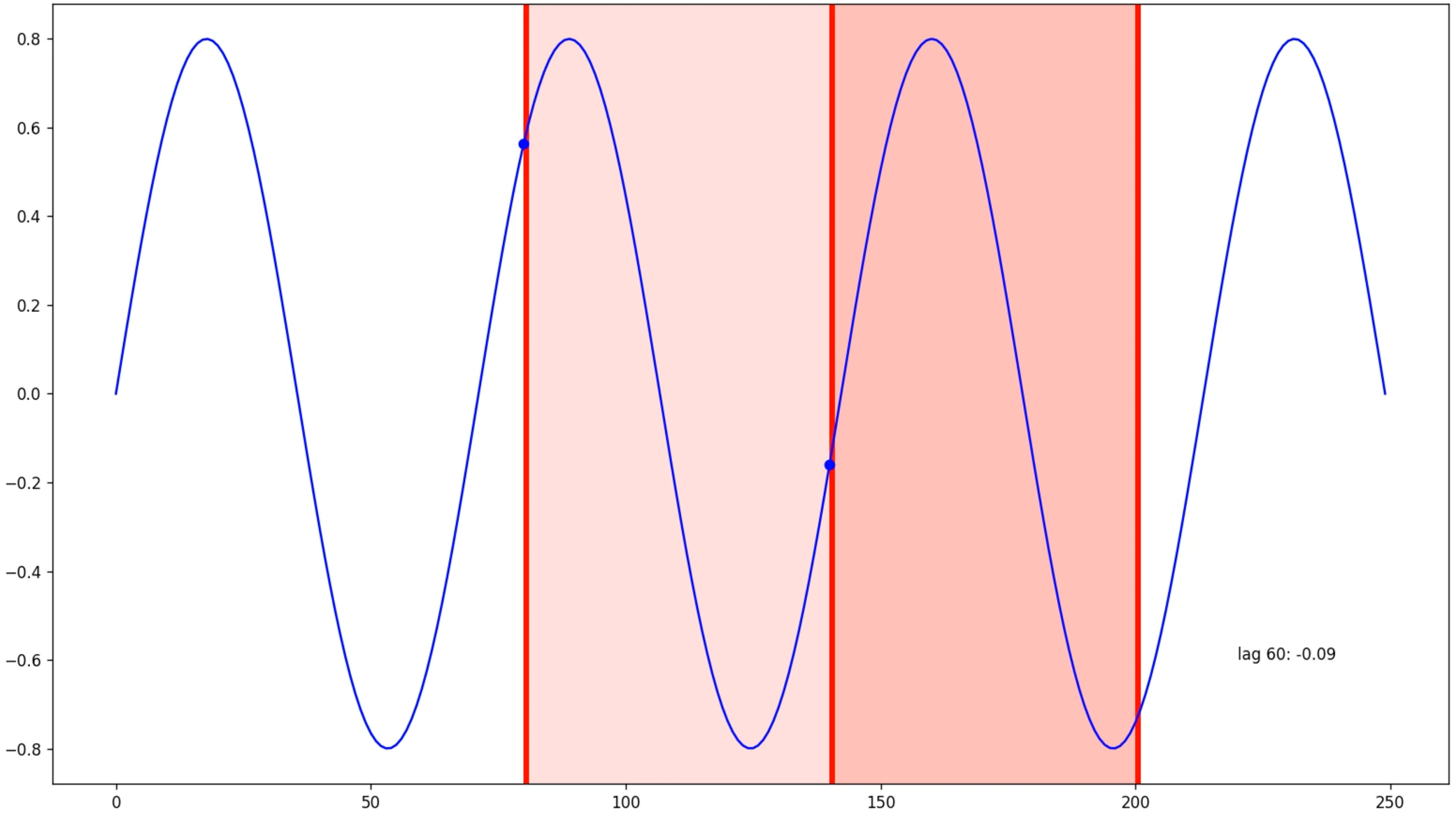
$$\Phi_{i,L}(n) = \sum_{j=i-L-1}^{i} x_j x_{j-n} \tag{1}$$



Blue dot is

Blue dot is

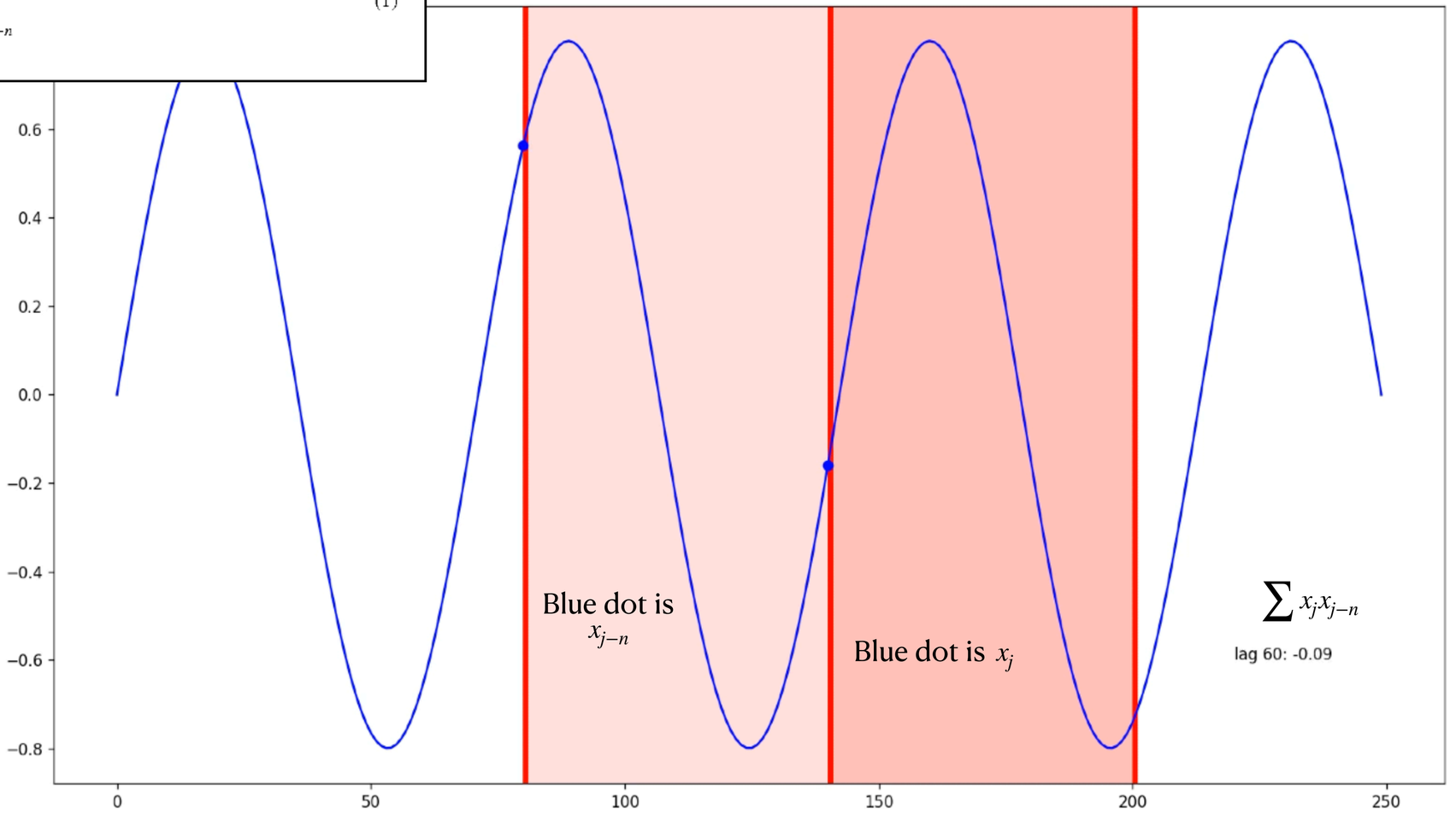

0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
−0.8
0
50
100
150
200
250
lag 60: -0.09

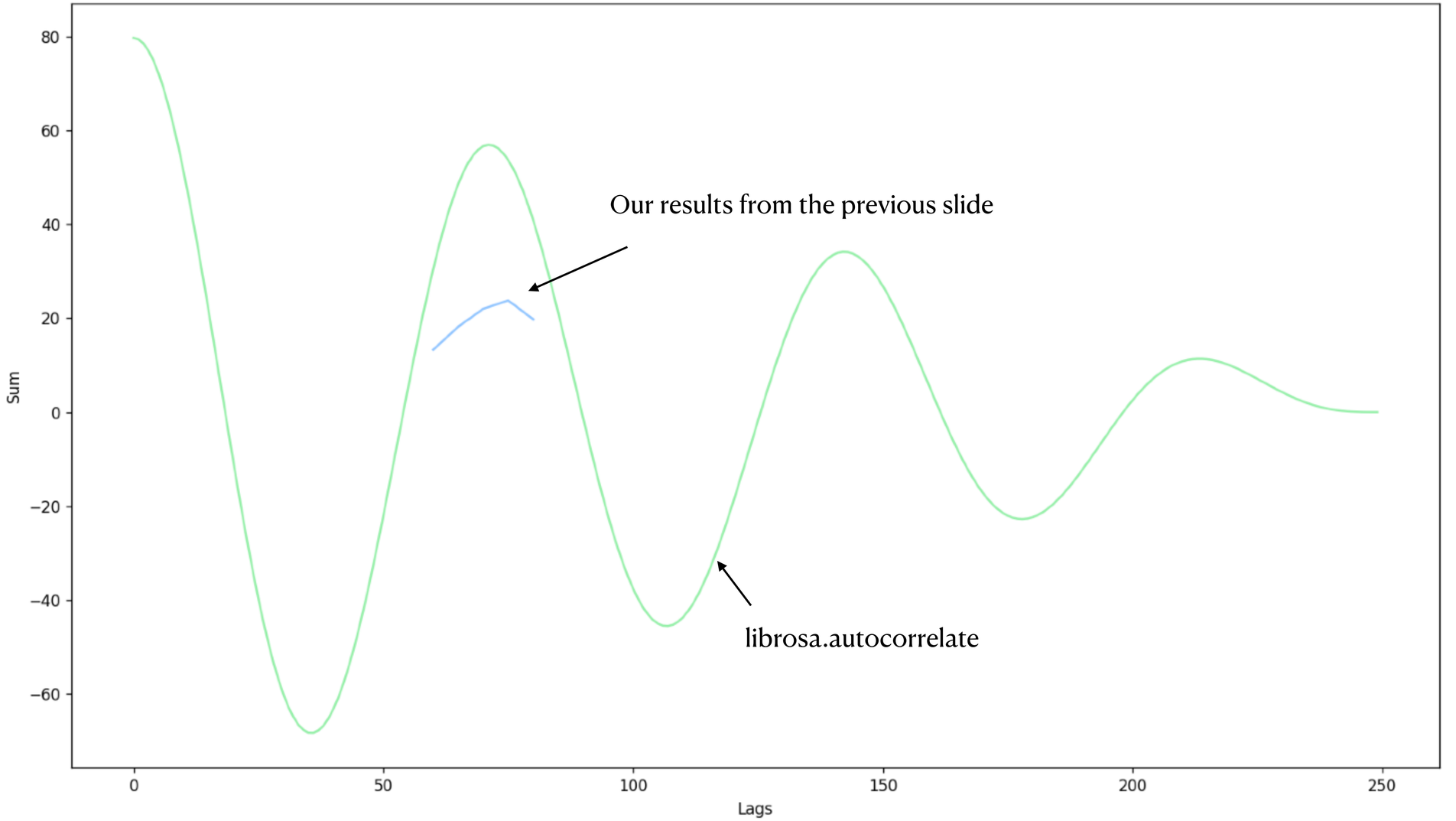

0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
−0.8
0
50
100
150
200
250
lag 60: -0.09

Auto-correlation

Specifically, at time, i, given a sequence of sampled data, $\{x_j\}$, of a waveform of period L for j=0, . . . , i, the auto-correlation as a function of lag n can be expressed,

$$\Phi_{i,L}(n) = \sum_{j=i-L-1}^{i} x_j x_{j-n} \quad (1)$$




Our results from the previous slide
librosa.autocorrelate
Sum
Lags
80
60
40
20
0
−20
−40
−60
0
50
100
150
200
250