Solution

A FFT for a NxN pixels image requires $\mathbf{2N^2 log_2 N}$ real multiplications.

In total (FFT, complex numbers, inverse FFT), we need: $\mathbf{2N^2 log_2 N + 4N^2 + 2N^2 log_2 N = 4N^2(1+log_2 N)}$ operations.

Multiplying with coefficients (n coeff <>0) requires $\mathbf{N^2.n}$ multiplications.

Therefore, it's more suitable to work with coefficients if $\mathbf{n < 4(1+log_2 N)}$, wich gives n<40 for N=512.