

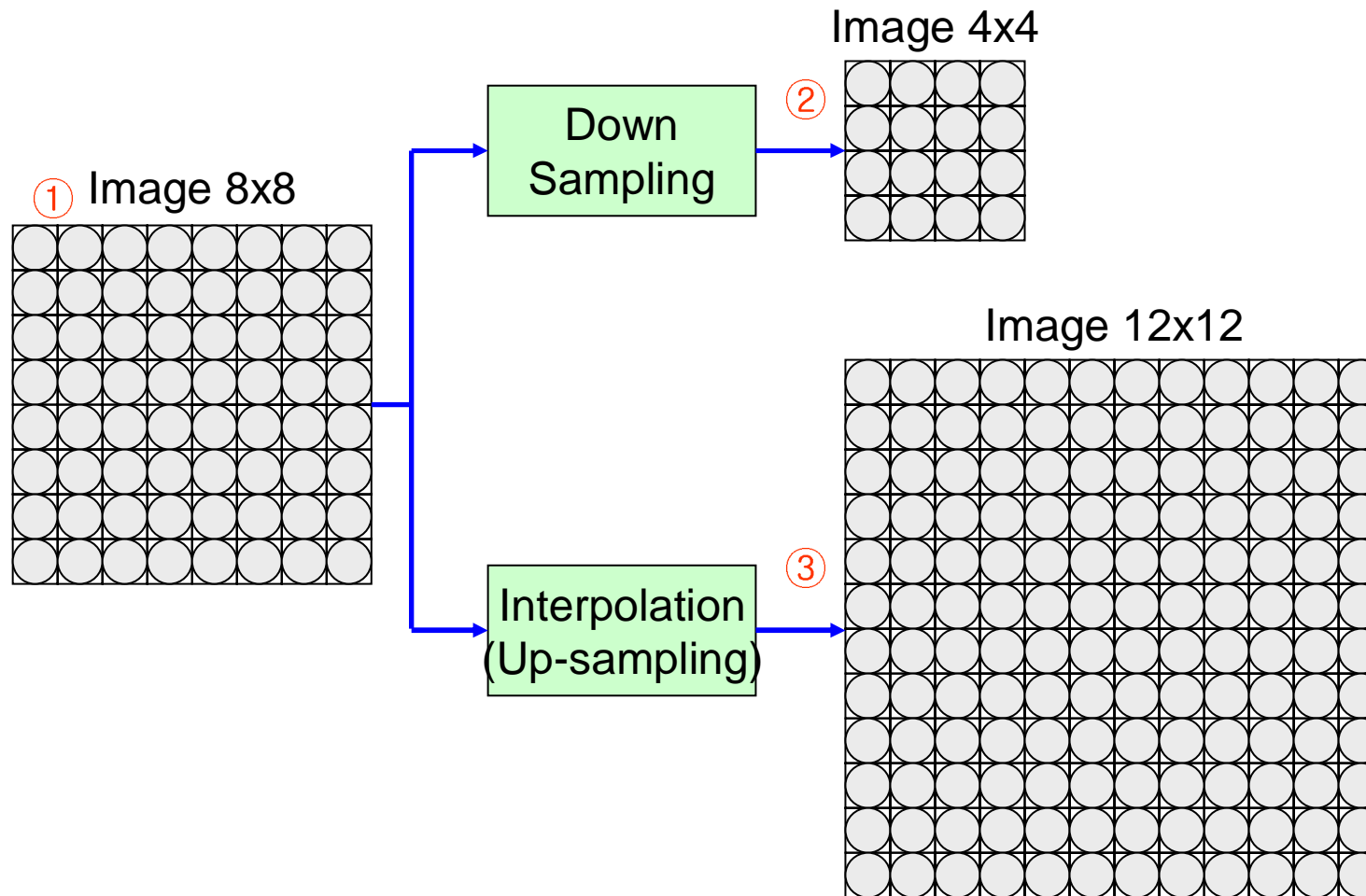
Resizing Images (Down-Sampling)



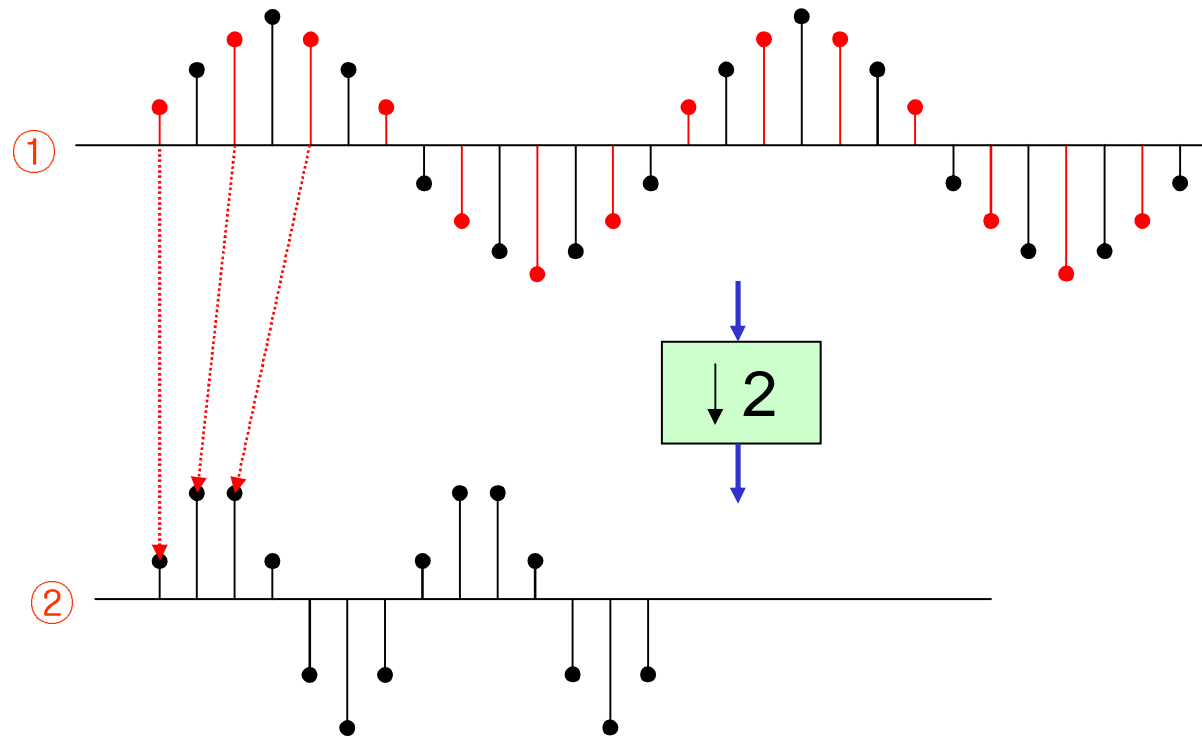
Hoon Yoo, Ph.D.

What is Image Resizing

- Change number of pixels down or up

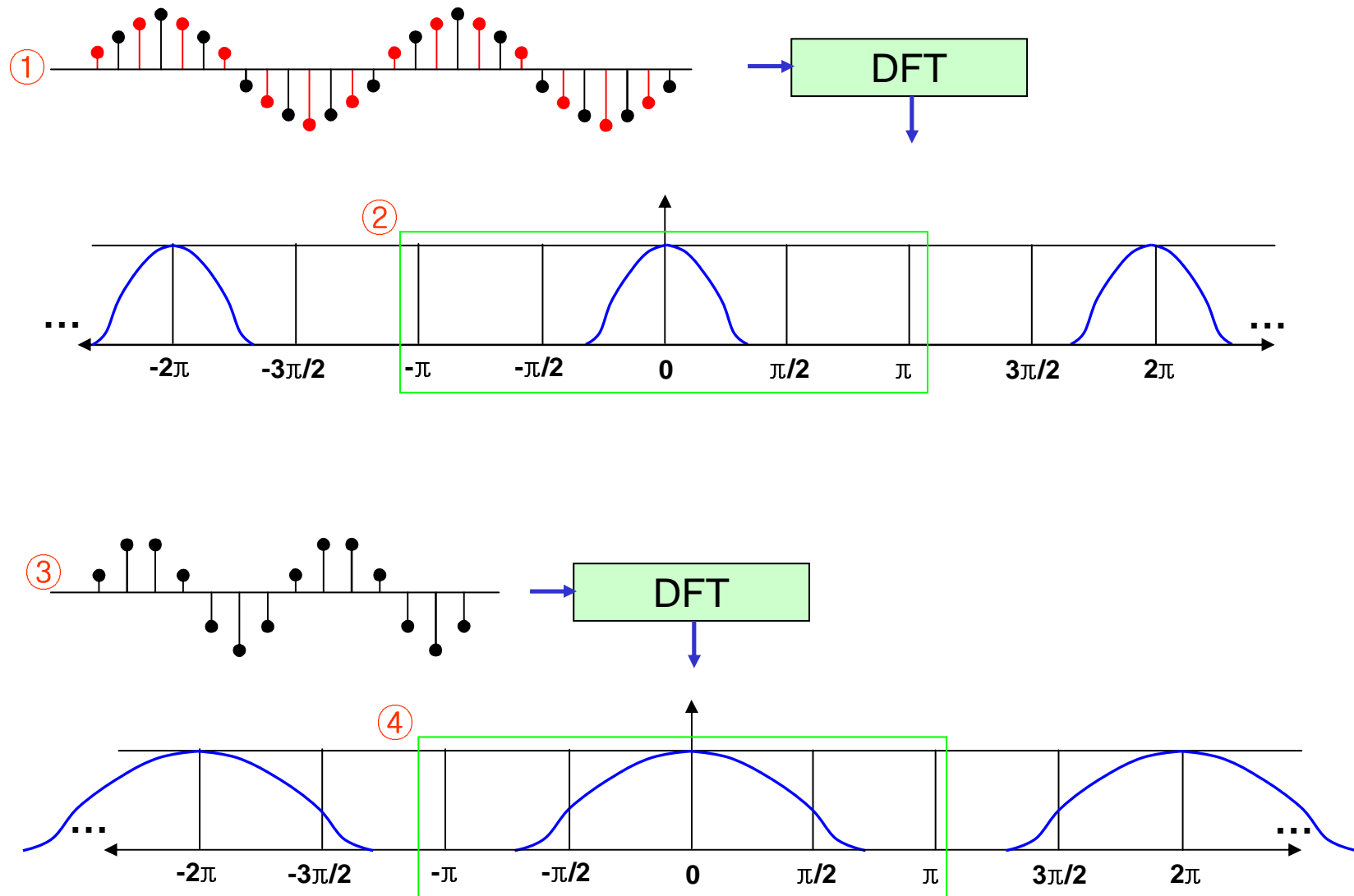


Down-Sampling In Temporal Domain

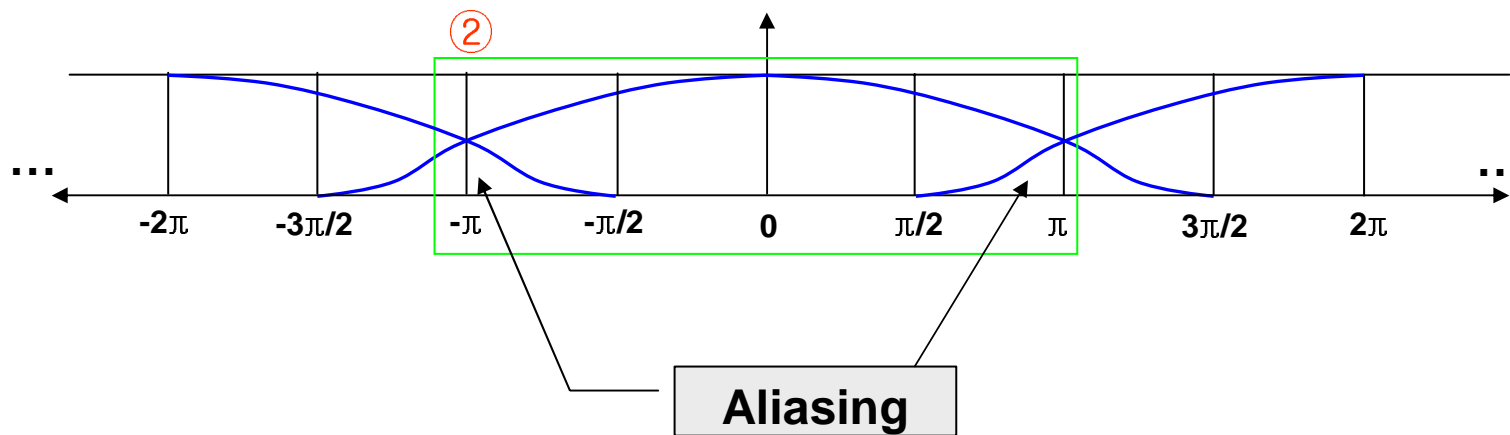
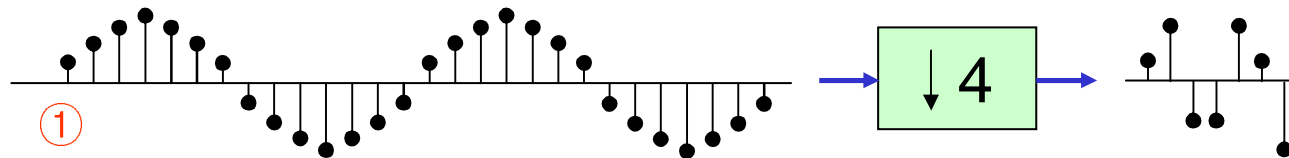


$$X[n] \rightarrow \downarrow 2 \rightarrow Y[n] = X[2n]$$

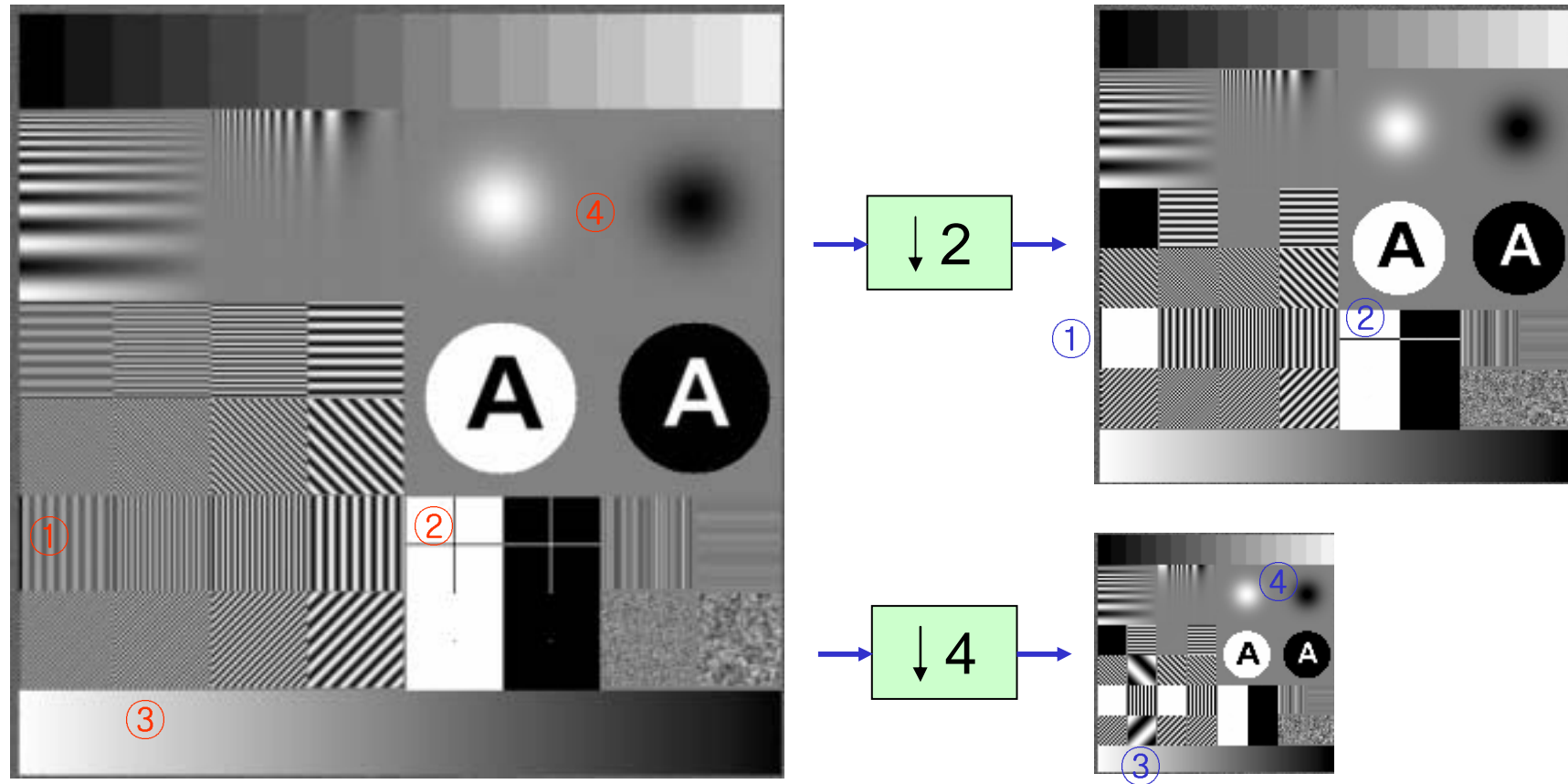
Down-Sampling and Frequency Response



Down-Sampling and The Aliasing Effect

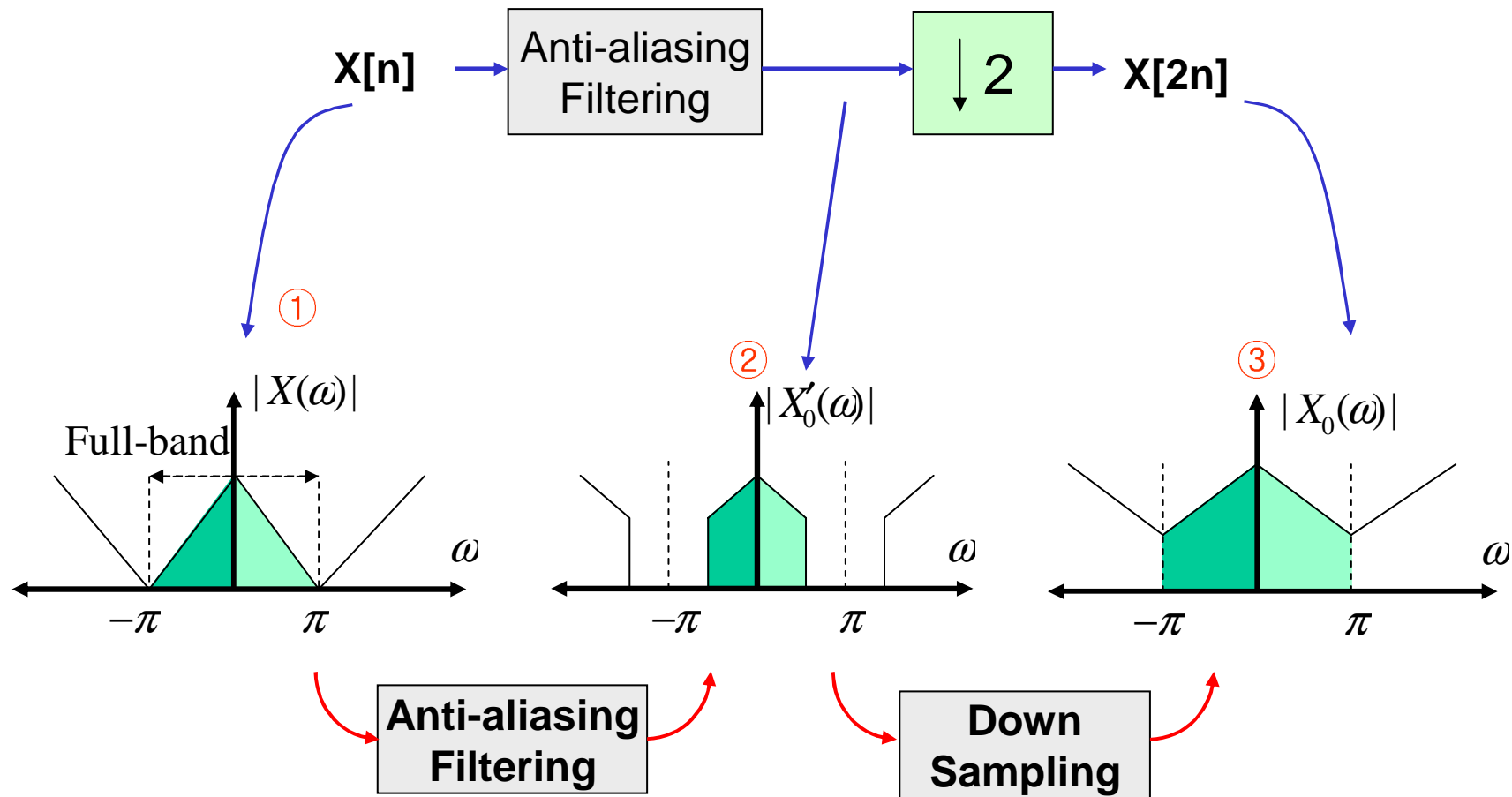


The Aliasing Effect in Images

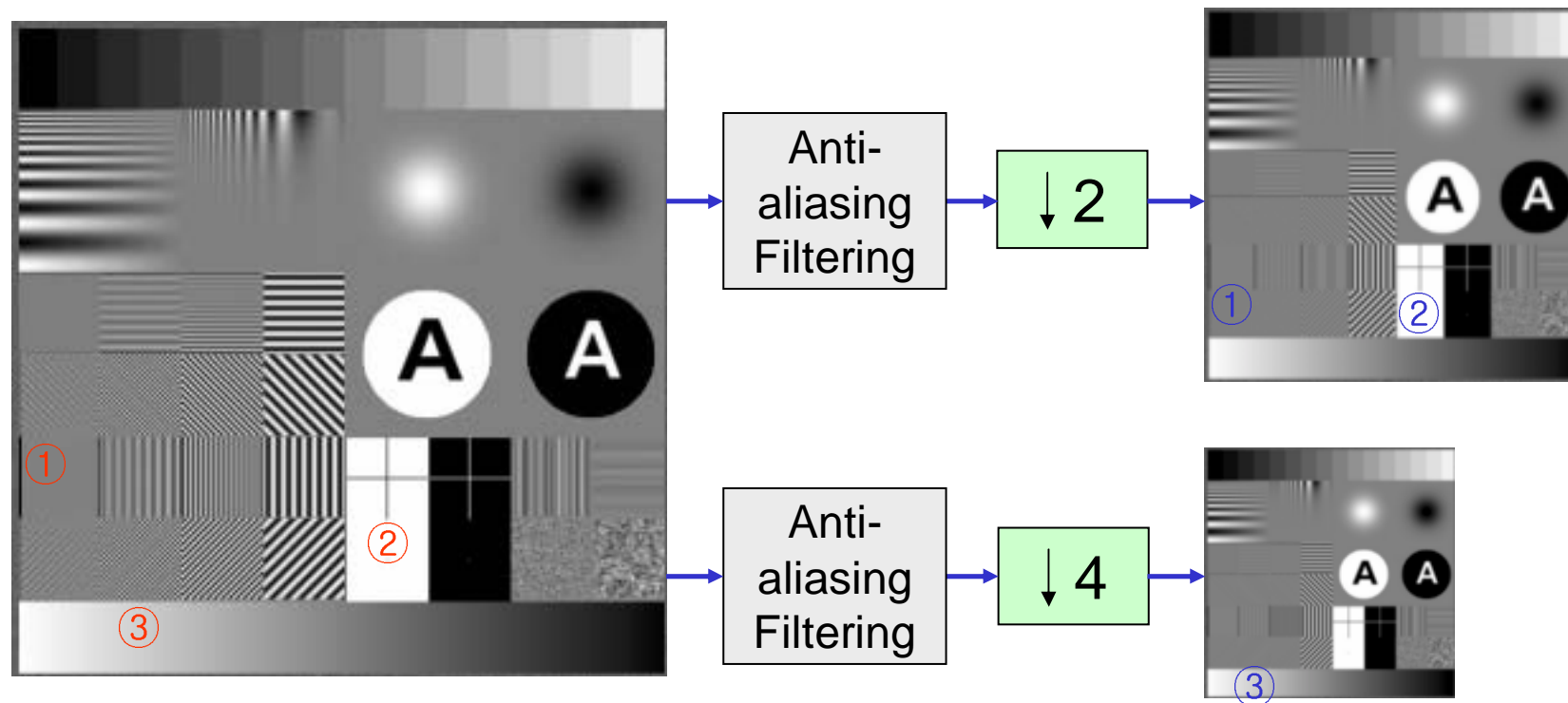


Canceling The Aliasing Effect

- Anti-aliasing filtering



Canceling The Aliasing Effect



Summary

- Down-sampling
- The aliasing effect
- Anti-aliasing filtering