Anti-Image Prefilter (6B)

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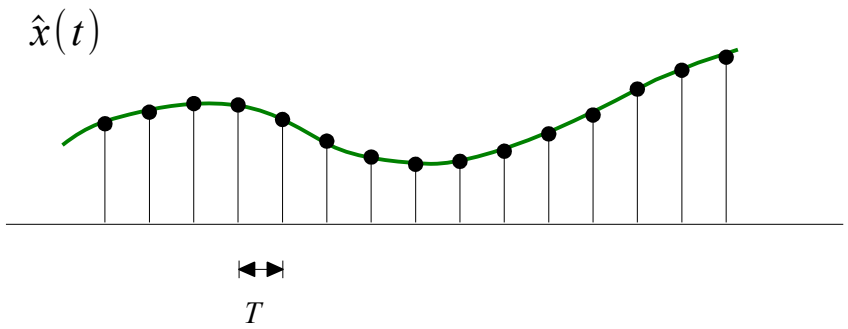
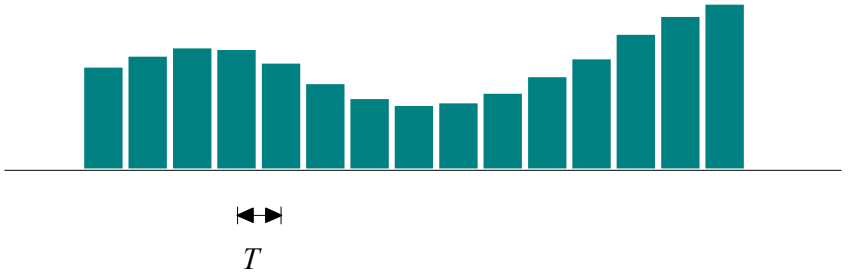
Analog Reconstructor





$$\hat{y}(t) = \sum_{n=-\infty}^{+\infty} y(nT)\,\delta(t-nT)$$

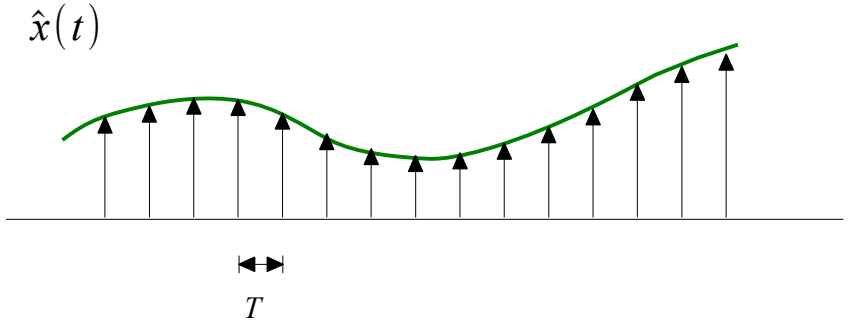
$$Y_a(f) = H(f)\,\hat{Y}(f)$$

$$y_a(t) = \int_{-\infty}^{+\infty} h(t-t')\,\hat{y}(t')\,dt'$$

$$\hat{Y}_a(f) = \frac{1}{T}\sum_{m=-\infty}^{+\infty} Y(f-m f_s)$$

$$y_a(t) = \sum_{n=-\infty}^{+\infty} y(nT)\,h(t-nT)$$

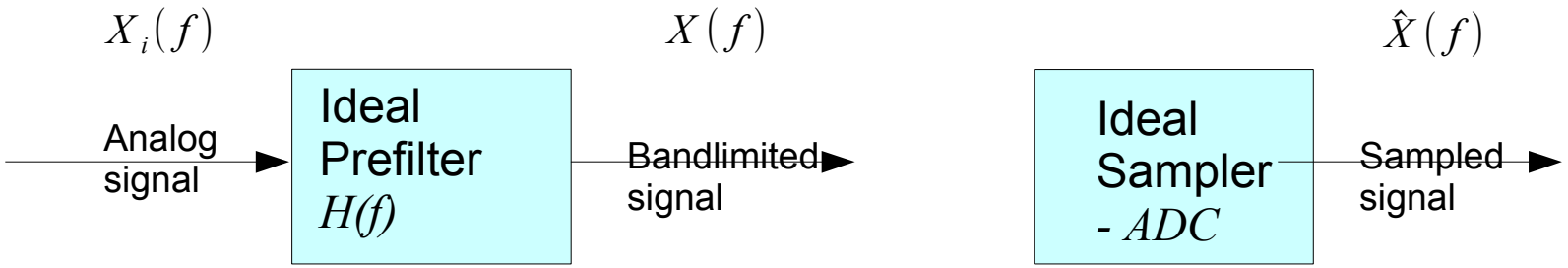
Impulse Response of Ideal Reconstructor

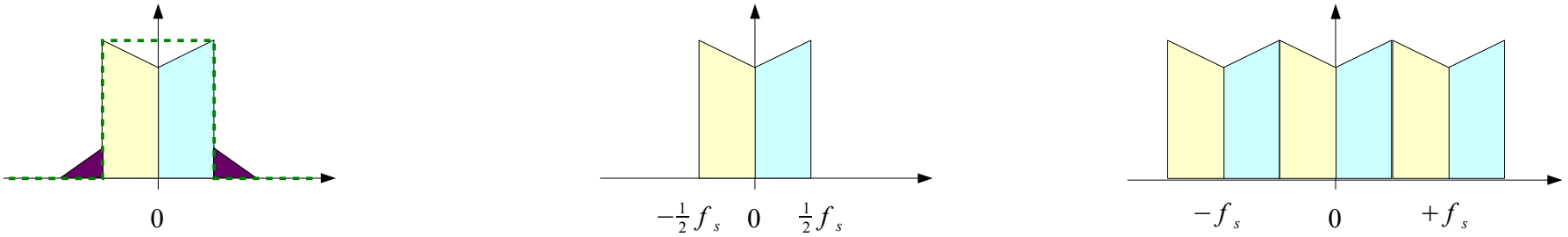


$$\hat{Y}(f) = \frac{1}{T} Y(f) \qquad -\frac{f_s}{2} \le f \le +\frac{f_s}{2}$$

$$y(t) = \sum_{n=-\infty}^{+\infty} y(nT)\,h(t-nT)$$

$$h(t) = \frac{\sin(\pi t/T)}{\pi t/T} = \frac{\sin(\pi f_s t)}{\pi f_s t}$$





$\frac{2}{4}f_s$ $\frac{3}{4}f_s$ f_s

References

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