

IMN-359

Décomposition/Reconstruction
en ondelettes 1D

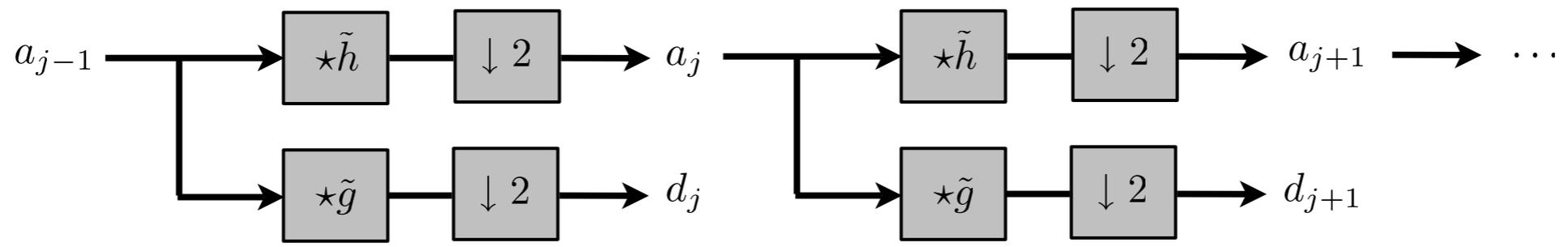


Figure 3.6: *Forward filter bank decomposition.*

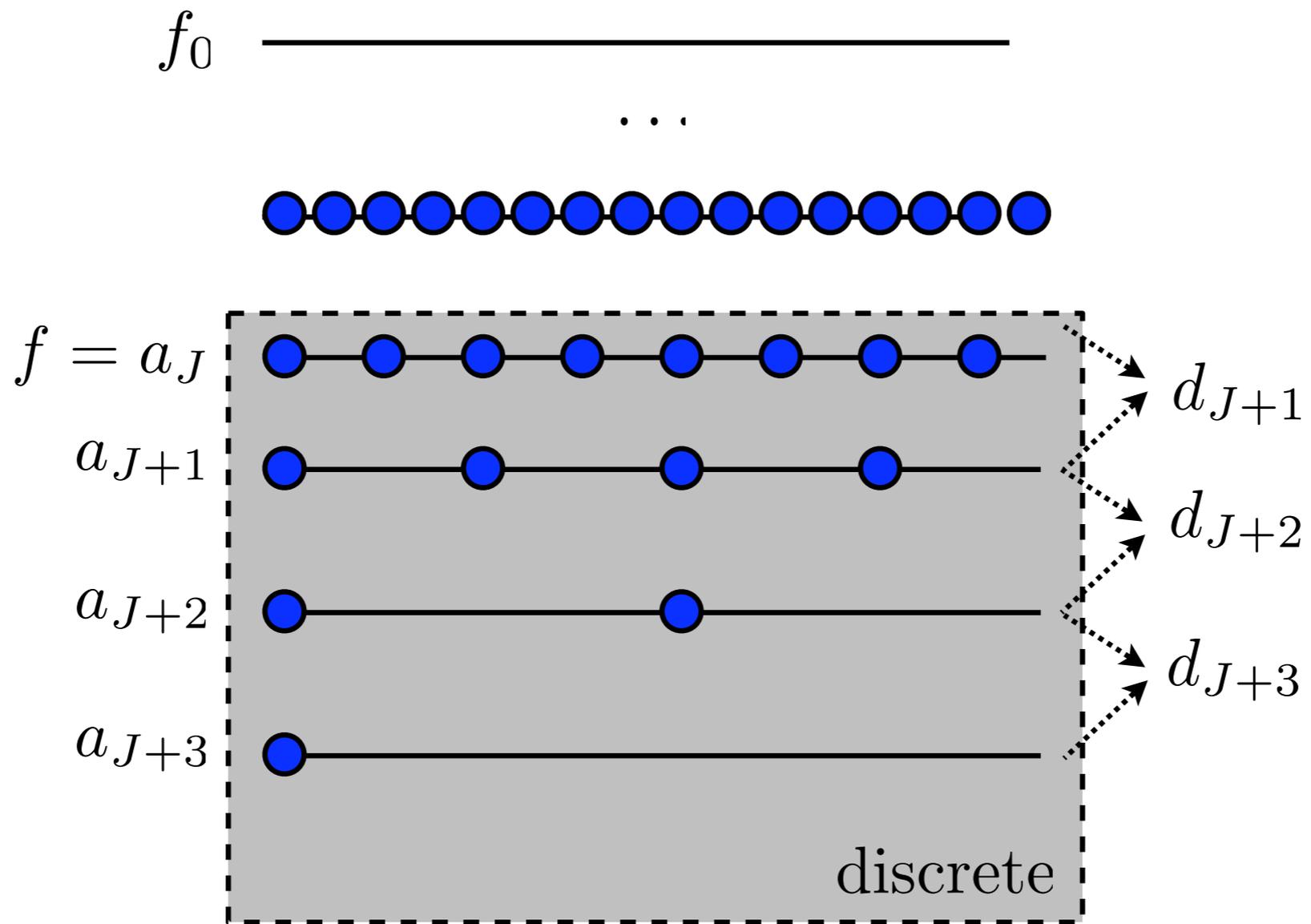
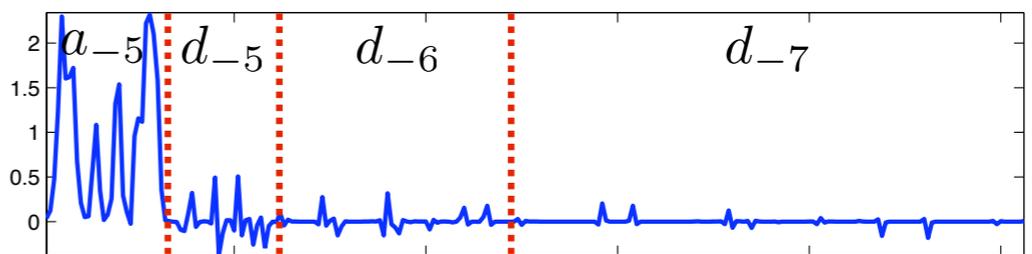
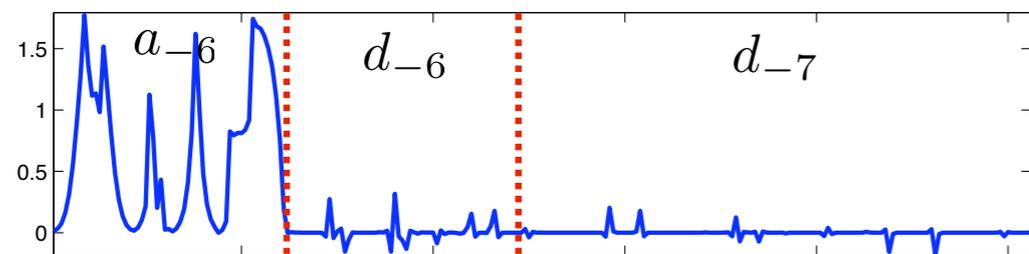
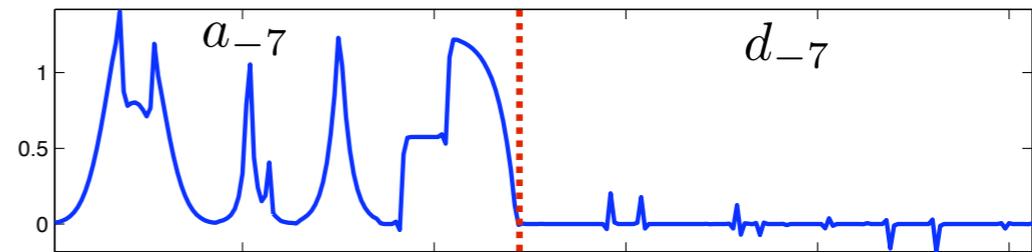
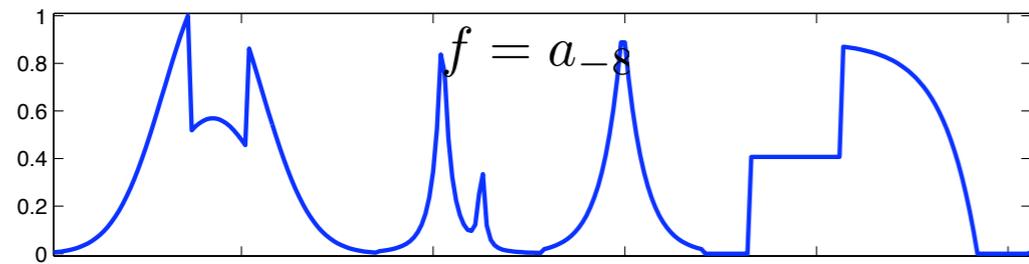


Figure 3.7: *Pyramid computation of the coefficients.*



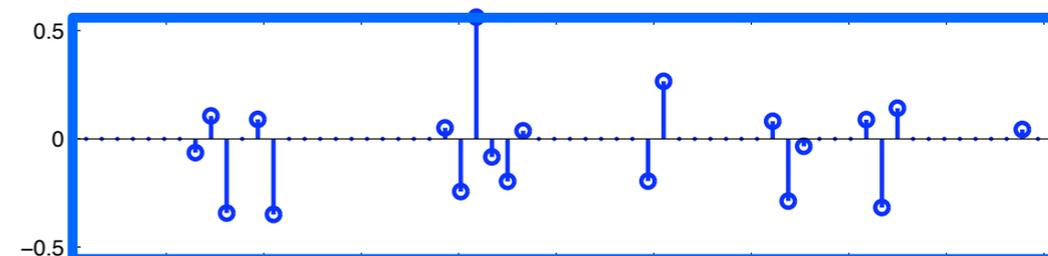
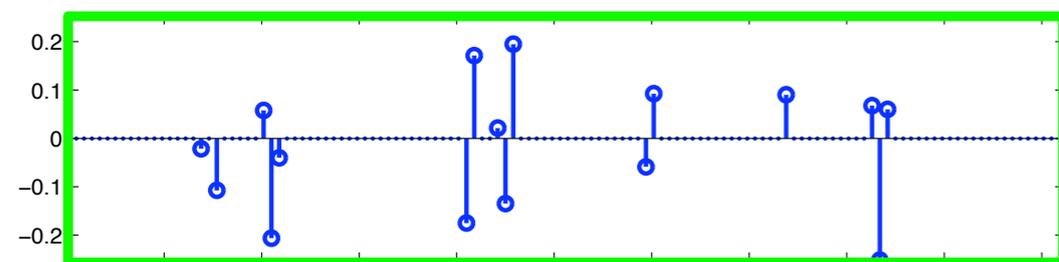
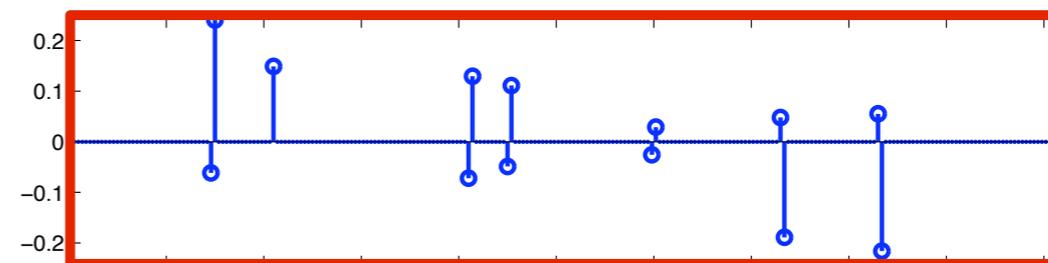
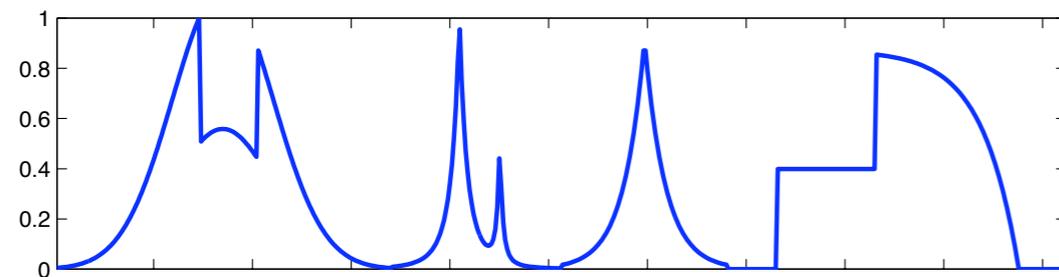
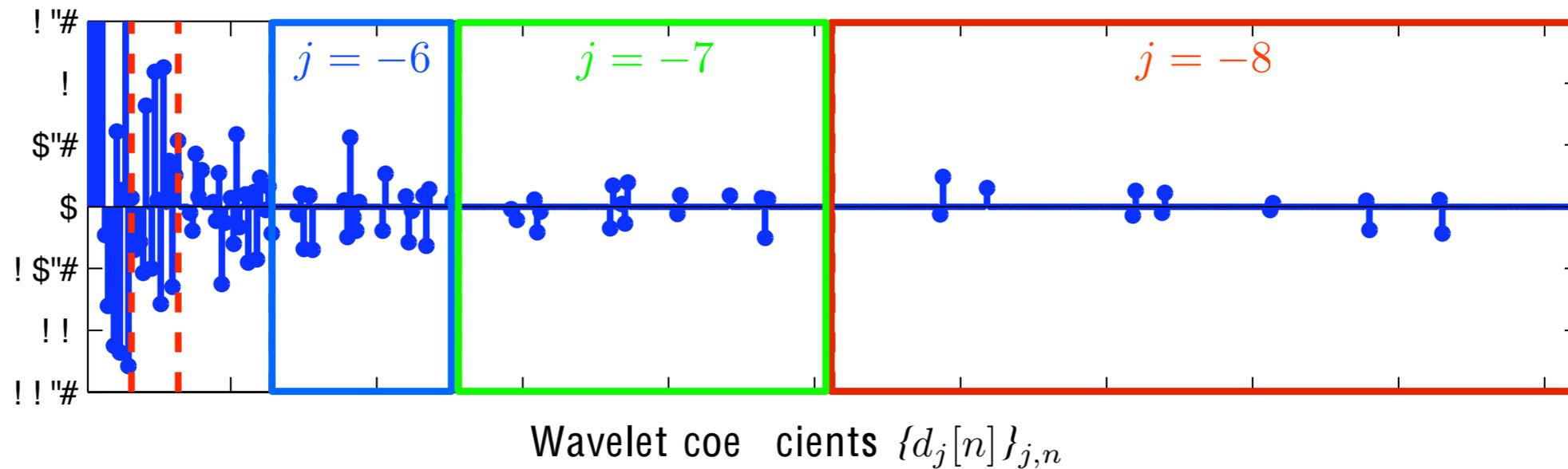
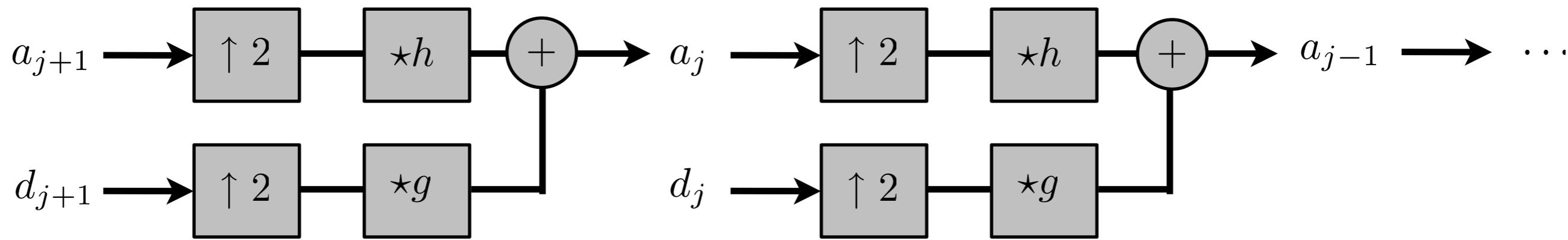


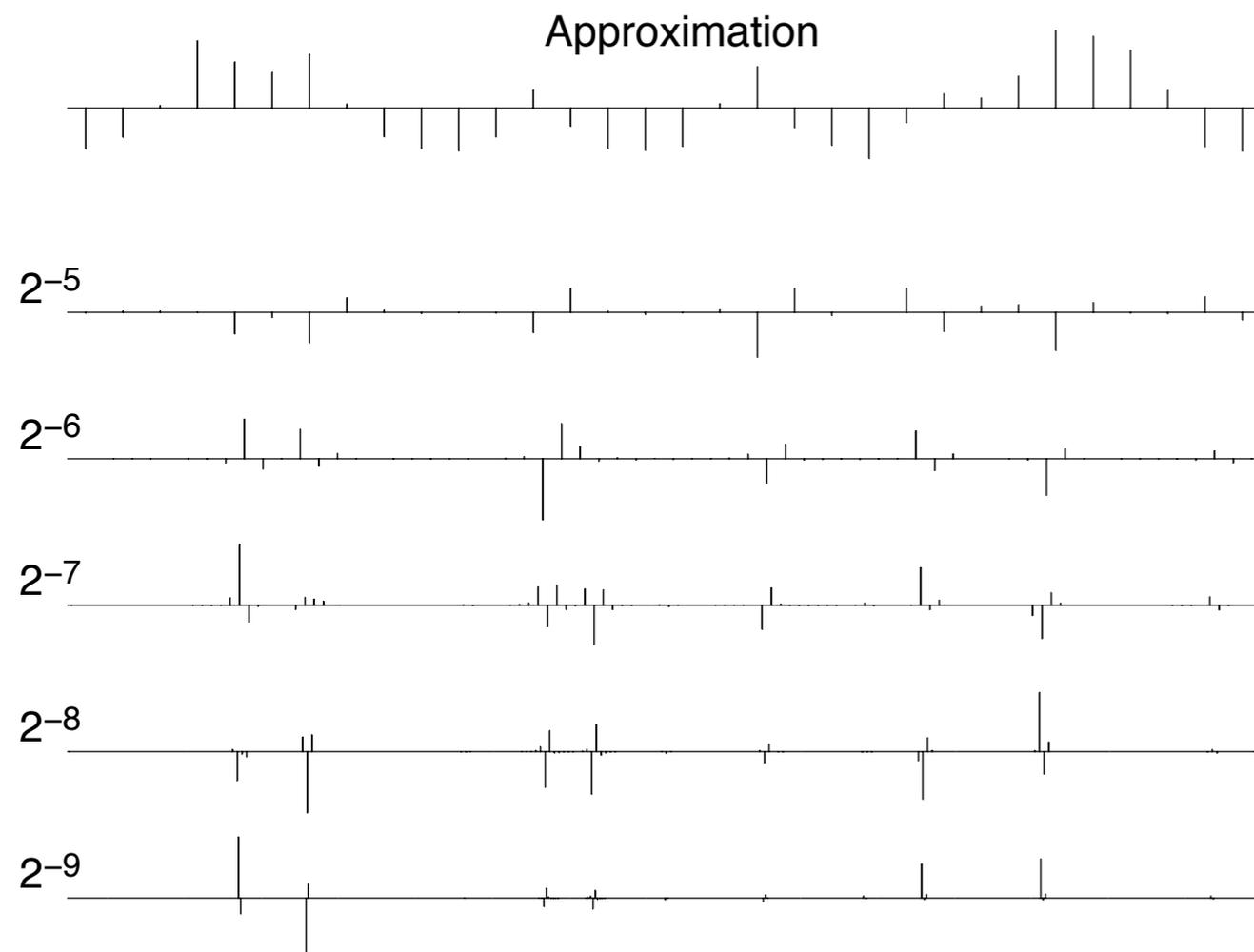
Figure 3.5: Wavelet coefficients. Top row: all the coefficients. Bottoms rows: zoom on the different scales

Transformée inverse

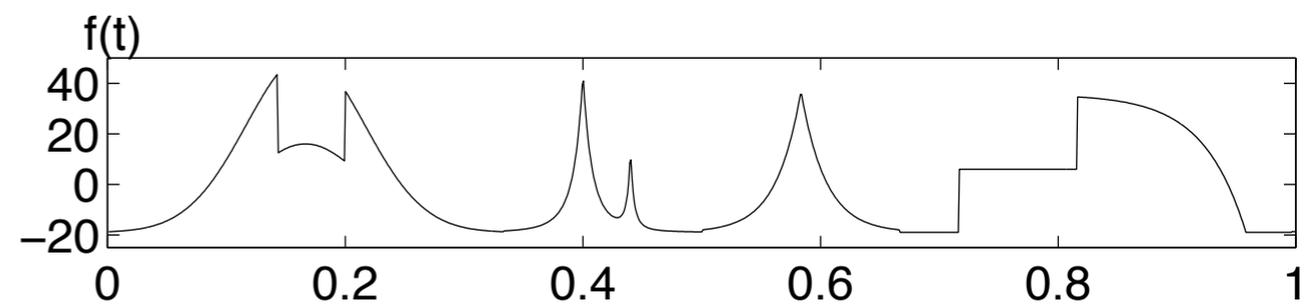
$$\begin{array}{c} a_j \\ \hline d_j \end{array} = \begin{array}{c} (\cdot \star \tilde{h}) \downarrow 2 \\ \hline (\cdot \star \tilde{g}) \downarrow 2 \end{array} \times \begin{array}{c} a_{j-1} \end{array} \implies \begin{array}{c} a_{j-1} \end{array} = \begin{array}{c} (\cdot \uparrow 2) \star h \quad (\cdot \uparrow 2) \star g \\ \hline \end{array} \times \begin{array}{c} a_j \\ \hline d_j \end{array}$$



Décomposition en ondelettes de Lemarié



Coefficients d'ondelettes $d_j[n]$



A Wavelet Tour of Signal Processing, 3rd ed. Wavelet coefficients $d_j[n] = \langle f, \psi_{j,n} \rangle$ calculated at scales 2^j with the Lemarié wavelet. Each up or down Dirac gives the amplitude of a positive or negative wavelet coefficient. At the top is the remaining approximation $a_J[n] = \langle f, \phi_{J,n} \rangle$ for $J = -5$.

Démo reconstruction

- FWT
- IFWT