A short demo for the 1D Haar transform
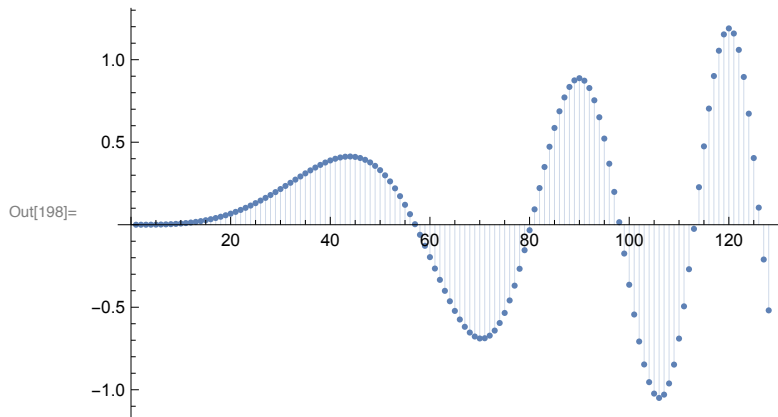
In[196]:= `f[t_] = t * Sin[10 * t^2]`
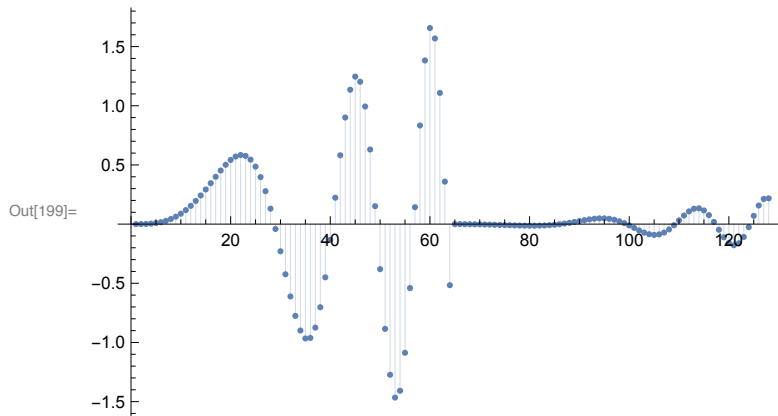
Out[196]= $t \, \text{Sin}\left[10 \, t^2\right]$

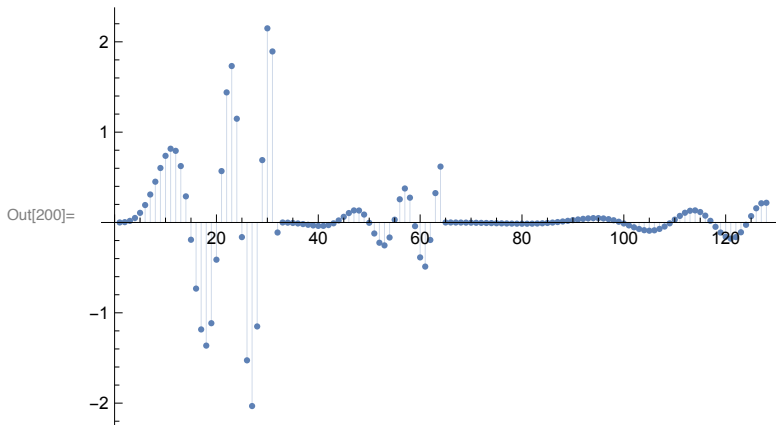In[197]:= `Plot[f[t], {t, 0, 1}, Filling → Axis]`

Out[197]=

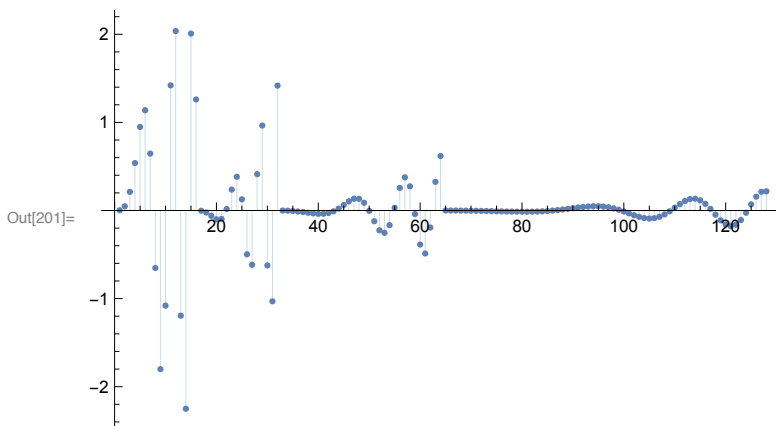In[198]:= `fd = Table[f[t], {t, 0, 1.27, 0.01}]; ListPlot[fd, Filling → Axis]`

Out[198]=

In[199]:= `fdh1 = ht[fd, 64]; ListPlot[fdh1, Filling → Axis, PlotRange → All]`

Out[199]=

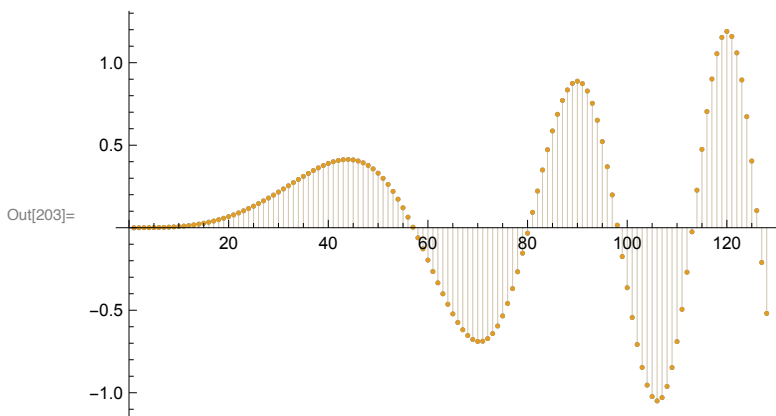In[200]:= `fdh2 = ht[fdh1, 32]; ListPlot[fdh2, Filling → Axis, PlotRange → All]`

Out[200]=

In[201]:= `fdh3 = ht[fdh2, 16]; ListPlot[fdh3, Filling → Axis, PlotRange → All]`

Out[201]=

In[202]:=

In[203]:= `ifd = iht[fdh3, 16, 3]; ListPlot[{ifd, fd}, Filling → Axis]`

Out[203]=
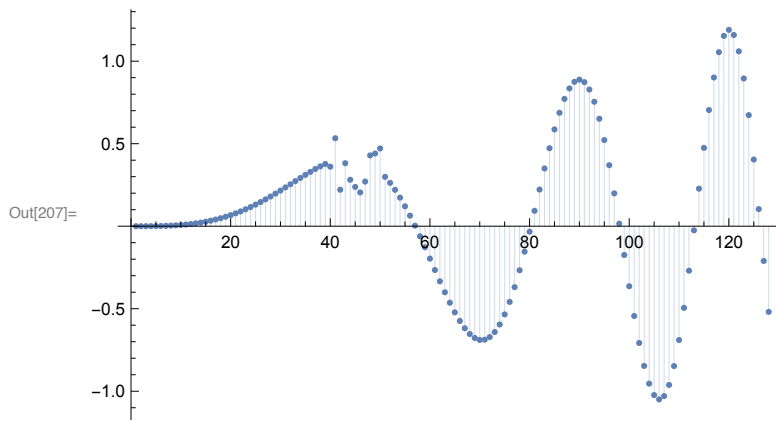
In[204]:= `noise[n_, s_] := Table[RandomReal[{-s, s}], {n}]`

In[205]:= `noise[10, 0.1]`
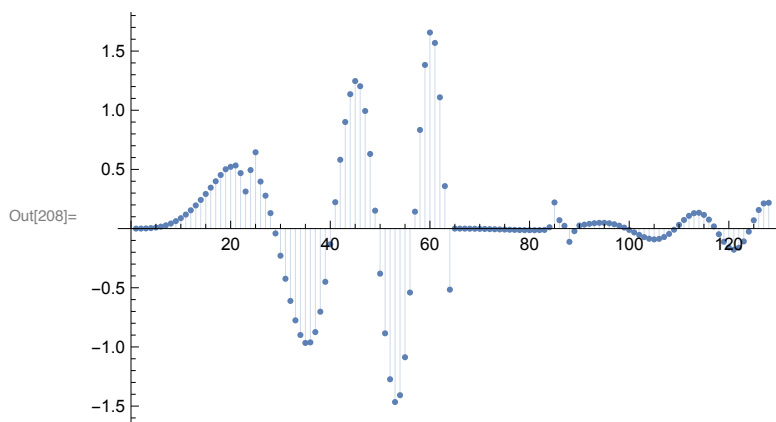
Out[205]= `{-0.0949152, -0.0810949, 0.0749784, 0.0730136, -0.0648844,`
`0.0807124, 0.00599271, -0.0294722, -0.09557, -0.0662002}`

In[206]:= `fdnoise[a_, b_, s_] :=`
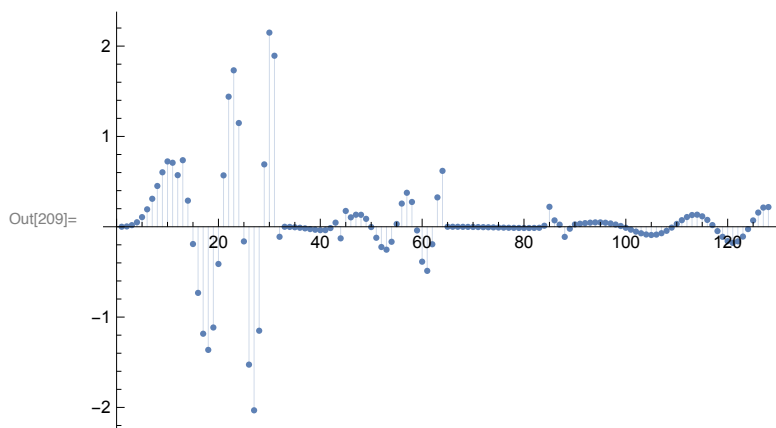`fd + Join[Table[0, {a - 1}], noise[b - a + 1, s], Table[0, {128 - b}]]`

In[207]:= `fdn = fdnoise[40, 50, 0.2]; ListPlot[fdn, Filling → Axis]`

Out[207]=

In[208]:= `fdnh1 = ht[fdn, 64]; ListPlot[fdnh1, Filling → Axis, PlotRange → All]`

Out[208]=

In[209]:= `fdnh2 = ht[fdnh1, 32]; ListPlot[fdnh2, Filling → Axis, PlotRange → All]`

Out[209]=

In[210]:= `ifdn = iht[fdnh2, 32, 2]; ListPlot[{ifdn, fdn}, Filling → Axis]`

Out[210]=