Tiling of the time frequency plane

Figure	6.3
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Basis vectors (for N = 16) of some commonly encountered transforms: (a) Fourier basis (real and imaginary parts), (b) discrete Cosine basis, (c) Walsh-Hadamard basis, (d) Slant basis, (e) Haar basis, (f) Daubechies basis, (g) Biorthogonal B-spline basis and its dual, and (h) the standard basis, which is included for reference only (i.e., not used as the basis of a transform).

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$$flow to determine time & frequency extent ofa function $h(t)$ in the time frequency plane.
Let $P_h(t) = \frac{|h(t)|^2}{||h(t)||^2}$ probability density for.
 $H(t) = \frac{|h(t)|^2}{||h(t)||^2} + ob$
Mean $H_t = \frac{1}{||h(t)||^2} \int_{-ob}^{+ob} t ||h(t)|^2 dt$
Variance $G_t^2 = \frac{1}{||h(t)||^2} \int_{-ob}^{+ob} (t - M_t)^2 ||h(t)|^2 dt$
 $F.T \leq h(t) \leq -d$
 $F.T \leq h(t) \leq -d$$$

$$P_{H}(f) = \frac{|H(f)|^{2}}{||H(f)||^{2}} - probability density fn}$$

$$mean \qquad \mu_{f} = \frac{1}{||H(f)||^{2}} \qquad for \quad H(f) \\ f = \frac{1}{||H(f)||^{2}} - \sigma \\ f = \frac{1}{||H(f$$



(a) Basis function localization in the time-frequency plane. (b) A standard basis function, its spectrum, and location in the time-frequency plane. (c) A complex sinusoidal basis function (with its real and imaginary parts shown as solid and dashed lines, respectively), its spectrum, and location in the time-frequency plane.

Recall Maar basis fra: $\begin{aligned} & \begin{array}{l} \psi_{s,t}(t) & \frac{s}{2} \\ \psi_{s,t}(t) &= 2 \\ \psi_{j,k}(x) &= 2 \\ \end{array} & \begin{array}{l} \psi(2 t - t) \\ \psi(2 x - k) \\ \end{array} \\ & \begin{array}{l} F_{r,T.} \end{array} & \begin{array}{l} \psi(2 t) \\ \psi(2 t) \\ \end{array} \\ & \begin{array}{l} = 1 \\ 12^{5} \end{array} & \begin{array}{l} \psi(\frac{f}{2^{5}}) \\ \end{array} \end{aligned}$ for 570 - s spectrum is stretched for 540 - spectrum is compressed



functions.