

# From Weyl-Heisenberg Frames to Infinite Quadratic Forms

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## Abstract

Let  $a, b$  be two fixed positive constants. A function  $g \in L^2(\mathbb{R})$  is called a *mother Weyl-Heisenberg frame wavelet* for  $(a, b)$  if  $g$  generates a frame for  $L^2(\mathbb{R})$  under modulates by  $b$  and translates by  $a$ , i.e.,  $\{e^{imbt}g(t-na)\}_{m,n \in \mathbb{Z}}$  is a frame for  $L^2(\mathbb{R})$ . In this paper, we establish a connection between mother Weyl-Heisenberg frame wavelets of certain special forms and certain strongly positive definite quadratic forms of infinite dimension. Some examples of application in matrix algebra are provided.