2D Quantum Haar, Daubechies, and Gabor Wavelets

Colin P. Williams and Farrokh Vatan

Summary

Two dimensional wavelet transforms find many applications in classical image processing and signal analysis. In this paper we describe how to design efficient quantum circuits for computing the 2D Quantum Haar, Daubechies and Gabor Wavelet transforms. These provide new primitive quantum transforms for application in quantum image processing and quantum image search engines.