On a global class of q-integral transforms and its uncertainty principles

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We propose a general class of q-integral transforms characterized essentially by having a bounded kernel and satisfying a set of natural and useful properties for realizing applications. This class includes, as particular cases, the q-cosine-Fourier, q-sine-Fourier, q-Bessel-Fourier and q-Dunkl integral transforms. Various properties of the introduced integral transform will be deduced and special emphasis will be placed on finding conditions that guarantee uncertainty principles of the Donoho-Stark type. In addition, generalizations of Price's local uncertainty principle for the q-cosine-Fourier, q-sine-Fourier, q-Fourier, q-Bessel-Fourier and q-Dunkl integral transforms will be presented.

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