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Karleigh Cameron, Michael Gustin* (mjugustin@gmail.com), **John Holden** and **Stacy Siereveld**. *Investigation of Second Generation Wavelets*.

It is well known that any element in L_2 has a basis expansion. Because of its localization property and fast transform algorithms, a wavelet basis expansion has many applications including speech, images, video, graphics, and engineering. For an infinite or periodic function a traditional wavelet basis works well. However, in many applications the domain of a function is not infinite and functions are not periodic. The need for improvements of wavelet bases introduces the second generation wavelets. We study properties of a lifting operator that serves as a tool to construct these second generation wavelets. (Received July 27, 2011)