1106-VL-2184 **Shane Michael Lubold*** (shane@lubold.com), 130 E. 14th Street, Tempe, AZ 85281, and **Anne Gelb**. *Higher-Order Concentration Factor Design For Nonlinear Underlying Functions in Fourier Edge Detection.*

The detection and characterization of changes or edges in signals is important in a number of signal-processing applications. Many of these applications collect data in the Fourier domain, which makes edge detection difficult because Fourier data are global, while edges are local features. The concentration factor method uses a first order accurate relationship between Fourier coefficients and the edges of the corresponding unknown function to devise a family of band pass filter (the concentration factors) that generates an approximation concentrating at the singular support of the underlying function, thereby detecting its edges.

In recent results, concentration factors were reverse-engineered based on this first order relationship between the Fourier coefficients and its corresponding edges. Specifically, concentration factors were constructed to find the edges of a saw tooth function. It is clear that for applications in which the underlying function has more variation between the edges, the concentration factor method may not be effective. Hence we develop new concentration factors that allow for more variation between the edges. The covariance of the different concentration factors enables us to predict edges in piecewise analytic functions with multiple jumps. (Received September 16, 2014)