Abstract

The classical orthonormal basis of spherical harmonics provides a powerful tool for analyzing spherical signals. A major disadvantage, however, is the fact that the Fourier coefficients only represent global quantities. For this reason, one is often interested in localized polynomial frames to obtain position-based information about the frequency content of a given signal. Our results affirm the efficiency of such systems, as we show that they are able to detect jump discontinuities which lie along smooth curves. Specifically, we present upper and lower estimates for the magnitude of the corresponding frame coefficients when the analysis function is concentrated in the vicinity of such a singularity.