



Minisymposium 13 - Approximationsmethoden für Probleme auf der Sphäre

The spherical Bernstein wavelet

MARTIN GUTTING (TU KAISERSLAUTERN, FACHBEREICH MATHEMATIK)

In this work we introduce a new bandlimited spherical wavelet: The Bernstein wavelet. It possesses a couple of interesting properties. To be specific, we are able to construct bandlimited wavelets free of oscillations. The scaling function of this wavelet is investigated with regard to the spherical uncertainty principle, i.e., its localization in the space domain as well as in the momentum domain is calculated and compared to the well-known Shannon scaling function. Surprisingly, they possess the same localization in space although one is highly oscillating whereas the other one shows no oscillatory behavior. Moreover, the Bernstein scaling function turns out to be the first bandlimited scaling function known to the literature whose uncertainty product tends to the minimal value 1.

This is joint work with M. J. Fengler and W. Freeden.