

**Markus Hansen**

*Philipps University Marburg, Germany*

### **Wavelets on the sphere: A group-theoretic approach**

Based on ideas by Antoine and Vandergheynst, continuous wavelet frames on the sphere are constructed from a single so-called admissible function by applying the unitary operators associated to a representation of the Lorentz group, which is square-integrable modulo the nilpotent factor of the Iwasawa decomposition. We then prove necessary and sufficient conditions for functions to be admissible, strengthening corresponding results by Antoine and Vandergheynst. Additionally, we show how the resulting conditions can be satisfied with the help of the Stereographic projection.