

## **Mathias Sonleitner: Numerical Integration and Approximation on the Sphere.**

As a more or less precise approximation to the surface of the earth, the sphere is a popular domain on which to integrate and approximate functions numerically. In a classical worst-case setting we investigate the quality of point sets mainly for numerical integration, but also approximation, in spherical Sobolev spaces and related spaces. We survey existing results and present a theorem proved jointly with David Krieg which yields an optimality criterion for uniform random points. We give some details on its proof which is based on least squares. Further we discuss equal integration weights and point to a gap occurring for low smoothness.