

Radio Occultation using Spherical Spline Approximation

Christian Blick

Department of Mathematics, University of Kaiserslautern, Germany

blick@mathematik.uni-kl.de

In order to compare the measurements obtained by the Radio Occultation Method, the data are to be visualized. Hence, this presentation gives the basic definitions and theorems of spline approximation on the sphere. Through its numerical stability and adjustable smoothing parameters, the method shows to be exceptionally suited to approximate the given data. Further on, it shows that the properties of the spline approximation in terms of "minimal bending energy" provide a good approximation of the data at hand. The results demonstrate that the spherical spline approximation method is an appropriate method to visualize the change over time of a given layer and the vertical composition of the Earth's atmosphere. Moreover, the method is uniquely suited to compare the layers of the atmosphere at different points in time as well as the approximation of parameters between the measurements on arbitrary points on the Earth.