

The aim of the underlying project is a detailed investigation of different convergence properties of orthogonal spline series for arbitrary spline degrees and arbitrary grid point sequences. A special case of such series would be the expansion of a function in its Haar series, which arises from the general case by specializing to spline degree 0 and to the dyadic grid point sequence. The problems to be treated range from almost everywhere convergence to convergence and unconditional convergence in different topological vector spaces such as the Lebesgue L^p spaces or the Hardy spaces H^p . Apart from scalar valued functions defined on intervals, we also consider periodic and vector valued (i.e. UMD-valued) functions.

The motivation for the treatment of those problems lies in the importance of spline functions in different areas of mathematics and numerous applications, but also in the desire of systematic extension and generalization of existing results that specialize in spline degree and/or the underlying grid point sequence.