A closer look at the B-spline interpolation problem in the setting of Hilbert C^*-modules

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In this talk, we introduce the B-spline interpolation problem corresponding to a C^*-valued sesquilinear form on a Hilbert C^*-module, investigate its fundamental properties and explore the uniqueness of solution. We study the problem in the case when the Hilbert C^*-module is self-dual. Extending a bounded C^*-valued sesquilinear form on a Hilbert C^*-module to a sesquilinear form on its second dual, we then provide some necessary and sufficient conditions for the B-spline interpolation problem to have a solution.

Moving to the set-up of Hilbert W^*-modules, we characterize the case when the spline interpolation problem for the extended C^*-valued sesquilinear form has a solution. As a consequence, we give a sufficient condition that for an orthogonally complemented submodule of a self-dual Hilbert W^*-module $\mathcal{X}$ is orthogonally complemented with respect to another C^*-inner product on $\mathcal{X}$.