Refinable Spline Functions: Uniform B-splines and their Generalizations

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Resumen

We study smooth piecewise polynomial functions, on regular meshes, which are refinable, i.e., they can be expressed as finite linear combinations of translates and dilates of themselves. Starting with uniform univariate B-splines, which have numerous useful properties and applications, the discussion extends to multivariate generalizations such as box splines and multi-box splines. In particular we consider (orthogonal) bases and frames for spaces spanned by such functions over all levels of refinement.