Multivariate Up-like Functions

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This talk presents the generation of multivariate C^∞ functions with coompact small supports by non-stationary subdivision schemes. Following the construction of such a univariate function, called "Up function", by a non-stationary scheme based on masks of stationary schemes generating B-splines of growing degrees, we term the multivariate functions we generate Up-like functions, and generate them by non-stationary schemes based on masks of stationary schemes generating box-splines of growing supports .

To analyze the convergence and smoothness of these non-stationary schemes, we develped new tools for analyizing convergence and smoothness of certain classes of non-stationary schemes which are wider than the class of schemes generating Up-like functions. These new tools are also presented in the talk, as well as a method for achieving small compact supports, by which we obtain in the univariate case Up-like functions with supports $[0, 1+\epsilon]$, with ϵ arbitrarily small, in comparison to the support $[0, 2]$ of the Up function.

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