Chui, Charles K.; **Lai, Mingjun**

On multivariate vertex splines and applications. (English) Zbl 0628.41006

Topics in multivariate approximation, Proc. Int. Workshop, Santiago/Chile 1986, 19-36 (1987).

[For the entire collection see Zbl 0624.00012.]

A basis of multivariate splines with an arbitrarily preassigned order of smoothness, smallest possible supports, and the lowest corresponding total degree is constructed on an arbitrarily given grid partition which consists of simplices and parallelopipeds. The optimal order which is one higher than the degree of the piecewise polynomials can be attained for both approximation and interpolation using this basis. As an important application, results on least-squares approximation to arbitrary discrete scattered data are obtained. In particular, the optimal order of approximation on any subregion is guaranteed.

MSC:

41A15 Spline approximation

Keywords:

multivariate splines; order of smoothness