1035-65-60 **Xiquan Shi*** (xshi@desu.edu), 1200 N. Dupont HWY, Dover, DE 19901, and **Ben Kamau**, **Baocai Yin** and **Fengshan Liu**. *The Generic Dimension of the Space of Smooth Splines of Degree 7 on Tetrahedral Partitions.*

It is well-known that in essential, obtaining the dimension of a spline space is equivalent to obtaining the rank of the coefficient matrix of a homogeneous system of linear equations. In this paper, we present a hybrid method of combining both the Bézier coefficients and function values (including the directional derivatives) of splines to obtain the homogeneous system of linear equations, instead of using Bézier coefficients only by most previous authors. For the smooth spline spaces of degree 7 on tetrahedral partitions, this method makes it possible to clearly analyze the structures of the corresponding coefficient matrices. As a result, we give an expression for the dimensions of the spaces. (Received July 04, 2007)