1083-41-6 **Simon Foucart** and **Tatyana Sorokina***, tsorokina@towson.edu. *Computation of dimensions of multivariate spline spaces via Hilbert polynomials and Hilbert series.* Preliminary report.

A computational method to obtain explicit formulae for the dimension of spline spaces of smoothness r and degree d over simplicial partitions is described. We show how to derive these formulae in the form of a linear combination of binomial coefficients using computed values of this dimension for a finite number of parameters r and d to interpolate the Hilbert polynomial. Then we apply Hilbert series to obtain explicit formulae. The method is applied to conjecture the dimension formulae for the Alfeld split of an n-simplex and for several other tetrahedral partitions. (Received April 10, 2012)