1041-14-46   **Frank Sottile*** (`sottile@math.tamu.edu`), Department of Mathematics, Texas A&M University, Mailstop 3368, College Station, TX 77843, and **Luis David Garcia-Puente**, **Kristian Ranestad** and **Hans-Christian Graf von Bothmer**. *Linear Precision for Toric Surface Patches.*

Linear precision is the ability of a patch to replicate affine functions. While classical patches possess linear precision, it is not clear which exotic patches (e.g. toric patches) have this property. In fact, every patch has a unique reparametrization having linear precision—but the resulting blending functions are not necessarily rational functions.

In this talk, I will give background and discuss the classification of toric surface patches for which this reparametrization is given by rational functions. I will also explain how linear precision is related to maximum likelihood estimation in in algebraic statistics, and how to use iterative proportional fitting from statistics to compute patches. This is joint work with Luis Garcia, Kristian Ranestad, and Hans-Christian Graf von Bothmer. (Received July 28, 2008)