1046-52-1395 **Andras Bezdek*** (bezdean@auburn.edu), Department of Mathematics and Statistics, 221 Parker Hall, Auburn University, Auburn, AL 36849-5310, and **Jan P Boronski**, **Wesley Brown**, **Braxton Carrigan** and **Matt Noble**. *On a new proof of the Malfatti's problem.* Preliminary report.

The following problem was posed by Malfatti in 1803: How to arrange in a given triangle three non-overlapping circles of greatest total area? Malfatti assumed that the solution would be obtained by three mutually touching circles each touching also two edges of the triangle (commonly called as Malfatti's circles). Curiously, Malfatti had been wrong in his initial assumption. In 1930 Lob and Richmond observed that in an equilateral triangle the packing with one large inscribed triangle and two other inscribed in the remaining space is in fact better. In 1967 Goldberg outlined an argument, with graphical support, that Malfatti's arrangement never solves the area maximizing problem. It was no sooner than in 1992, when Zalgaller and Los showed that greedy arrangement is always the best (i.e. where one chooses the circles in three steps, each time choosing a maximal possible one). In the present talk, by a simple non-analytic argument, we show that the solution to the original problem must be either the Malfatti arrangement or the greedy arrangement. Our approach can be used for the analogous question concerning perimeter, but more importantly it can be used to solve the analogous question for spherical triangles. (Received September 15, 2008)