1065-52-118 **Andras Bezdek*** (bezdean@auburn.edu), Department of Mathematics and Statistics, Auburn University, Parker Hall 221, Auburn, AL 36849. *Thin covering of the sphere with various convex spherical sets.* Preliminary report.

One of the basic problems in discrete geometry is to determine the most efficient packing or covering of a given convex set in the plane, in the space or on the sphere. This talk will concentrate on coverings of the surface of the unit sphere S^2 (in three dimensional space). In case of a given convex spherical set, one wants to find the smallest number of congruent copies needed to cover S^2. This talk will describe a new family of convex spherical sets, which do not tile S^2, yet for which the optimal coverings can be determined. These convex sets also have an unexpected covering property: no rearrangement of the sets taking part of the covering can produce a crossing free covering (we say that two spherical discs cross each other if the removal of their intersection causes each disk to fall into disjoint components). These results were motivated by the construction and the proof technique used in a recent joint paper with W. Kuperberg: Unavoidable crossings in the thinnest plane covering with congruent convex discs (Discrete Comput. Geom. (2010) 43: 187-208). (Received September 08, 2010)