Meeting: 1002, Pittsburgh, Pennsylvania, SS 2A, Special Session on Convexity and Combinatorics

1002-52-124 **Wlodzimierz Kuperberg*** (kuperwl@auburn.edu), Department of Mathematics, Parker Hall, Auburn University, Auburn, AL 36849-5310. *On the space of affine classes of convex bodies.* Preliminary report.

Let $\mathcal{K}_n$ denote the space of convex bodies in $\mathbf{R}^n$ with topology generated by the Hausdorff metric, and let $\mathcal{K}_n^*$ be the quotient space of $\mathcal{K}_n$ obtained by identifying convex bodies that are affinely equivalent. It is known that $\mathcal{K}_n^*$ is metrizable and compact [A.M. Macbeath, 1951]. We establish some other topological properties of $\mathcal{K}_n^*$, such as contractibility and local connectedness. We are particularly interested in the special transformations $T^* : \mathcal{K}_n^* \to \mathcal{K}_n^*$ that are induced by affine-equivariant maps $T : \mathcal{K}_n \to \mathcal{K}_n$. For example, $\mathcal{K}_n^*$ is affine-equivariantly contractible to a unique point, and every affinely-equivariant contraction of $\mathcal{K}_n$ defines a starlike structure on $\mathcal{K}_n^*$ with a unique star-center, the ellipsoid class. (Received September 10, 2004)