

MATHEMATICS DEPARTMENT COLLOQUIUM, CSU

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3PM–4PM RT 1516

On the local equatorial characterization of Zonoids

Dima Ryabogin, Kent State University

Abstract. We will describe basic properties of zonotopes and zonoids (convex bodies that are finite and infinite sums of segments). Zonotopes can be easily characterized as polytopes with two-dimensional symmetric faces. Moreover, every zonotope has “zones” — sets of two-dimensional faces containing edges parallel to any given edge. On the other hand, as it was shown by W. Weil in 1977, there is no simple “inner” characterization of zonoids. In particular, W. Weil asked whether one can obtain the so-called “local equatorial” characterization, that would correspond to the “zonal description” of zonotopes, mentioned above. It was shown by G. Panina and independently by P. Goodey and W. Weil that such characterization is, indeed, possible in *even* dimensions. Recently we (together with F. Nazarov and A. Zvavitch) proved that the local equatorial characterization of zonoids is possible *only* in even dimensions. If time allows we will discuss this result.

* Refreshments at 2:30 PM in RT 1517