

# STAR-SHAPED SEPARABILITY WITH APPLICATIONS

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Separability of two convex sets is one of the fundamental facts of convex analysis that can be considered as a geometrical form of Hahn-Banach theorem. Some attempts to extend the notion of separability for star-shaped sets were undertaken in [2] and [1]. A separability of two star-shaped subsets of  $\mathbb{R}^n$  by means of  $m$  linearly independent linear functions (the so-called weak separability) was defined and studied there.

Some applications of weak separability will be examined in this talk. In particular a “best approximation-like” problem for star-shaped sets will be considered: we introduce a star-shaped distance and consider the minimization of this distance over a star-shaped set. This result can be considered as an example of necessary and sufficient conditions for global minimum that can be obtained in terms of weak separability.

## References

- [1] Rubinov, A. M., *Abstract Convexity and Global Optimization*, Kluwer Academic Publishers, Boston-Dordrecht-London, 2000.
- [2] Shveidel, A., Separability of star-shaped sets and its application to optimization problems, *Optimization*, 1997, **40**, 207–227.