

TOPICS IN FUNCTIONAL ANALYSIS AND CONVEX GEOMETRY

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ABSTRACT

In this thesis we study different problems in Convex Geometry with the aid of the Fourier Transform and tools of Functional Analysis.

In the second chapter we construct an example of a non-intersection body all of whose central sections are intersection bodies.

The third chapter is devoted to the study of the geometry of L_0 . We introduce the definition of embedding of a normed space in L_0 , give a characterization of subspaces of L_0 and confirm the place of L_0 in the scale of L_p spaces.

In the fourth chapter we modify the assumptions of the original Busemann-Petty problem in order to obtain the positive answer in all dimensions.

Chapter five is focused on L_p -centroid bodies and generalization of some results of Lutwak and Grinberg, Zhang to $-1 < p < 1$.