Cleveland State University
College of Science

COLLOQUIUM

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Framework for the Theory of Higher Order Convex Bodies

Friday Sept. 29th at 2:30pm in RT 1516

Bio: I received my PhD from Kent State in 2020 under the supervision of Artem Zvavitch. I spent 2 years at Tel Aviv University as a Zuckerman Post-Doctoral scholar and one year at Brown University as a Post Doc at ICERM. Currently, I am a VAP at CWRU. My areas of interest are Convex Geometry, Analysis and Probability and their interactions.

Abstract: We develop the basic theory of "higher–order" convex bodies beginning with a result of Schneider from 1970 concerning the Rogers-Shephard inequality. Building upon Schneider's work, we develop the notion of the higher order L_p-projection body and L_p-centroid body. If time permits, we will discuss proofs of the associated affine isoperimetric inequalities: Petty projection inequality, Zhang's projection inequality, and Busemann-Petty Centroid inequality.
In particular, we discuss two interesting consequences of our results that are surprisingly new to the literature:
1) A version of the Busemann random simplex inequality for the mean width, but where the random simplex is replaced by a random polytope and where the vertices of the random polytope need not be i.i.d.
2) A extremal volume inequality for operator norms between Banach spaces.

This talk in based on joint works, and ongoing works, with Julian Haddad, Dylan Langharst, Eli Putterman, and Deping Ye.

Refreshments will be served in RT 1517 at 2:10pm