

THE CATHOLIC UNIVERSITY OF AMERICA
Washington, DC 20064

**SEMINAR IN FUNCTIONAL ANALYSIS
AND RELATED AREAS**

Wednesday, February 15, 2023

5:10 p.m. - 6:50 p.m. (including a coffee break)

SPEAKER: Dr. Sudeshna Basu
Department of Mathematics and Statistics, Loyola University Maryland

TITLE: Small Diameter Properties in Banach spaces

ABSTRACT: The geometry of Banach space is an area of research which characterizes the topological and measure theoretic concepts in Banach spaces in terms of geometric structure of the space. In this work we study three different versions of small diameter properties of the unit ball in a Banach space and its dual. The related concepts for all closed bounded convex sets of a Banach space were initiated, developed and extensively studied in the context of Radon Nikodym Property and Krein Milman Property in [1] and developed subsequently. We prove that all these properties are stable under l_p sum for $1 \leq p \leq \infty$, c_0 sum and Lebesgue Bochner spaces. We show that these are three space properties under certain conditions on the quotient space. We also study these properties in ideals of Banach spaces. The talk is based on two papers jointly written with my graduate student, Susmita Seal [2], [3]. [1] N. Ghoussoub, G. Godefroy, B. Maurey, W. Scachermayer; Some topological and geometrical structures in Banach spaces, Mem. Amer. Math. Soc. 70 378 (1987). [2] S. Basu S. Seal, Small Combination of Slices, Dentability and Stability Results Of Small Diameter Properties In Banach Spaces", Journal of Mathematical Analysis and Applications, Volume (507), 2022 <https://doi.org/10.1016/j.jmaa.2021.125793>. [3] S. Basu, S. Seal, " Small diameter properties in ideals of Banach Spaces" To appear in Journal of Convex Analysis 30 (2023), No. 1, Math Archive link, <https://doi.org/10.48550/arXiv.2109.04963>, 2022.

PLACE: Aquinas Hall, room 108. The talk will be on Zoom as well (from 5:10 p.m. to 6:50 p.m. ET). The corresponding link will be sent to everyone in advance.

ORGANIZERS: V. Bogdan (The Catholic University of America), P. Kainen (Georgetown University), R. Kalpathy (The Catholic University of America), and A. Levin (The Catholic University of America).

Tel: [202-319-5221](tel:202-319-5221), [202-319-5222](tel:202-319-5222). Fax: [202-319-5231](tel:202-319-5231). E-mail: levin@cua.edu

Web page: <https://mathematics.catholic.edu/faculty-and-research/mathematics-seminar/index.html>