

# İSTANBUL ANALYSIS SEMINARS

## MEASURES OF NONCOMPACTNESS, SOME APPLICATIONS AND VISUALIZATIONS

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**Abstract:** Measures of noncompactness have important applications in various parts of mathematics, in particular, in functional analysis and operator theory. In this talk, we give an introduction to measures of noncompactness on bounded sets in complete metric spaces and Banach spaces, and a survey of the most important basic properties of certain measures of noncompactness, in particular, we consider the Kuratowski, Hausdorff and separation measures of noncompactness. We also define and study the Hausdorff measure of noncompactness of operators between Banach spaces. Furthermore, we demonstrate how measures of noncompactness can be applied in fixed point theory, the theory of differential and integral equations, and the characterizations of classes of compact operators between certain Banach spaces. Finally, we give some applications of our results and their visualizations in crystallography.

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**Time:** 15:40

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Bankalar Caddesi 2, Karaköy 34420, İstanbul