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SOME PROBLEMS IN FUNCTIONAL ANALYSIS INSPIRED BY HAHN–BANACH TYPE THEOREMS

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Dedicated to Professor T. Ando with affection

Communicated by K. Ciesielski

ABSTRACT. As a cornerstone of functional analysis, Hahn–Banach theorem constitutes an indispensable tool of modern analysis where its impact extends beyond the frontiers of linear functional analysis into several other domains of mathematics, including complex analysis, partial differential equations and ergodic theory besides many more. The paper is an attempt to draw attention to certain applications of the Hahn–Banach theorem which are less familiar to the mathematical community, apart from highlighting certain aspects of the Hahn–Banach phenomena which have spurred intense research activity over the past few years, especially involving operator analogues and nonlinear variants of this theorem.

For a discussion of a whole lot of issues related to the Hahn–Banach theorem not treated in this paper, the best source is a famous survey paper by Narici and Beckenstein [?] which deals, among other things, with the different settings witnessing the validity of the Hahn–Banach theorem.

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