Convexity of the Lower Partition Range of a Concave Vector Measure[3]

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Abstract. This paper investigates a class of nonadditive measures on σ-algebras, named *concave measures*, to establish a Lyapunov-type convexity theorem. To this end, we introduce convex combinations of measurable sets in terms of a nonatomic vector measure and demonstrate the convexity of the lower partition range of a concave vector measure. The main result is applied to a fair division problem along the lines of L. E. Dubins and E. H. Spanier, (1961), "How to cut a cake fairly", *American Mathematical Monthly*, vol. 68, pp. 1–17.

Key words: Nonatomic finite measure, Concave measure, Convexity, Lower partition range, Fair division

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