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STRONG INTEGRAL SUMMABILITY AND THE STONE-ČECH COMPACTIFICATION OF THE HALF-LINE

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An f-measure is a finitely additive nonnegative set function defined on a collection of subsets of $[0, \infty)$ which vanishes on bounded Lebesgue measurable sets. We define statistical convergence and convergence in density relative to an f-measure and use nonnegative regular integral summability methods to generate f-measures. We observe that, for a large class of regular integral summability methods, the notions of strong integral summability, convergence in density and statistical convergence (relative to the f-measure generated by the method) coincide for bounded functions.

The support set of an f-measure is a subset of the Stone-Čech compactification of $[0, \infty)$ that is generated by the measure. We characterize f-measures that generate nowhere dense support sets and f-measures which have P-sets for support sets. The support set of a nonnegative regular integral summability method is used to introduce some summability invariants for bounded strong integral summability. We show that the support sets of f-measures generated by some summability methods are compact zero-dimensional F-spaces of weight $\mathfrak{c}$ without isolated points, but that they need not be P'-spaces.

0. Introduction. Over the years a number of authors have discussed bounded strong summability, convergence in density and statistical convergence, where each of these notions is defined relative to a nonnegative regular matrix summability method. Each of these notions of convergence extends the usual definition of the limit and, it turns out, they are nicely related to one another. The pivot of most of these discussions is either the finitely additive measure generated by the matrix or the support set of the matrix. In this paper we adopt corresponding definitions for regular integral summability methods and show that, under necessary restrictions, many of the results known for matrix summability carry over to integral summability and can be used to establish summability invariants for bounded strong integral summability.

Curiously, although used in harmonic analysis **[20]** and differential equations **[19]**, there does not seem to be a standard introduction to