On consistent estimators of a usefull signal in the linear one-dimensional stochastic model when an expectation of the transformed signal does not exist

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Abstract. The separation problem for a family of Borel and Baire G-powers of shift-measures on R is studied for an arbitrary infinite additive group G using the technique developed in [Kuipers L., Niederreiter H., *Uniform distribution of sequences, John Wiley*& Sons, N.Y.:London. Sidney., Toronto, 1974], [Shiryaev A.N., *Probability* (in Russian), Izd.``Nauka", Moscow, 1980] and [Pantsulaia G.R., *Invariant and quasiinvariant measures in infinite-dimensional topological vector spaces*, Nova Science Publishers, Inc., New York, 2007]. It is proved that $T_n : R^n \to R \quad (n \in N)$ defined by

$$T_n(x_1, \cdots, x_n) = -F^{-1}(n^{-1} \#(\{x_1, \cdots, x_n\} \cap (-\infty, 0]))$$

for $(x_1, \cdots, x_n) \in R^n$, is a consistent estimator of a useful signal θ in the one-dimensional linear stochastic model

$$\xi_k = \theta + \Delta_k (k \in N)$$

where $\#(\bullet)$ is a counting measure and (Δ_k) is a sequence of independent identically distributed random variables on R with a strictly increasing continuous distribution function F and the expectation of Δ_1 does not exist.