Kudlaev, Eh. M.

Conditions for the weak convergence of distributions of separable statistics. (English. Russian original) Zbl 0624.60040

Math. Notes 40, 928-932 (1986); translation from Mat. Zametki 40, No. 6, 762-769 (1986).

This paper describes the class of weak limits (n→ ∞, $k_n\to\infty$) of the distributions of decomposable statistics of the form

$$\xi'_n=\sum_{k=1}^{k_n}f_{nk}(\theta_{nk}),$$

where f_{nk}, $k=1,\dots,k_n$ are real Borel functions defined on $\mathbb{R}^{\ell+m}$ and the joint distributions of the random quantities $\theta_{n1},\dots,\theta_{nk_n}$ coincide with the conditional distribution of some independent random vectors (η_{nk},ζ_{nk}), $k=1,\dots,k_n$, provided $\eta_n\equiv\sum_{k=1}^{k_n}\eta_{nk}=y_n$, $\zeta_n\equiv\sum_{k=1}^{k_n}\zeta_{nk}=z_n$.

Here for all values of n the distribution of the ℓ-dimensional vector η_n is absolutely continuous in the Lebesgue measure, and the distribution of the vector ζ_n is concentrated on the m- dimensional integer valued lattice.

The above-mentioned weak limits are expressed as an integral of the corresponding limiting conditional joint characteristic function of the vectors η_n and ζ_n. The idea of the Le Cam-Holst method [*L. Le Cam*, Publ. Inst. Stat. Univ. Paris 7, No.3/4, 7-16 (1959; Zbl 0083.138); *L. Holst*, Ann. Stat. 7, 551-557 (1979; Zbl 0406.62008) and Ann. Probab. 9, 818-830 (1981; Zbl 0471.60027)] is employed in the proof.

MSC:

60F05 Central limit and other weak theorems

60E10 Characteristic functions; other transforms

Keywords:

class of weak limits; distributions of decomposable statistics; conditional joint characteristic function; Le Cam-Holst method

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