

Linear Consistent Criteria for Testing Hypotheses

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In this work we are prove theorem which indicate when statistical structure [1] admits unbiased consistent criteria for testing hypotheses.

Let H is the separable Hilbert space, $B(H)$ Borel σ -algebra of subsets in H . Let on $B(H)$ is given a family of probability measures $(\mu_h, h \in H)$ with different average value

$$(a_h, z) = \int (z, x) \mu_h(dx)$$

for all $z \in H$ and with one and the same correlation operator B . We shall assume that the hypotheses are this average values. Let $\Theta \subset H$ is the set of hypotheses, which is assumed to be a convex manifold in H . Let $H_n \subset H_{n+1}$ some increasing sequence of such subspaces of H that $\bigcup_n H_n$ is everywhere dense in H . As a criterion, we consider sequence of linear mappings $\delta_n : H_n \rightarrow \Theta$, $\delta_n(x) = (b_n, x)$, where $b_n \in H_n$.

Theorem. Let P_n the projector on H_n , Operator P'_n satisfies following conditions: $P'_n(u) = u$, if u belongs orthogonal complement $H_n - P_n(H)$ of $P_n(H)$ in H_n and $P'_n(\nu) = H_n - P_n(H)$ for all $\nu \in H$, $P'_n B = B P'_n$ on H_n . If $z \in \bigcup_n H_n$ then in order for the statistical structure to allow an unbiased consistent criteria of testing hypotheses harmonized with sequence H_n is necessary and sufficient that $\lim_n \rightarrow \infty (B P'_n(z), P_n P'_n(z))$.

References

[1] L. Aleksidze, M. Mumladze, Z. Zerakidze The consistent criteria of hypotheses, Modern stocastics: theory and applications. Vol 1, 2014.