TESTS FOR A GIVEN LINEAR STRUCTURE OF THE MEAN DIRECTION OF THE LANGEVIN DISTRIBUTION

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Abstract. This paper deals with Watson statistic T_W and likelihood ratio (LR) statistic T_L for testing hypothesis $H_{0s} : \boldsymbol{\mu} \in V$ (a given s-dimensional subspace) based on a sample of size n from a p-variate Langevin distribution $M_p(\boldsymbol{\mu}, \kappa)$. Asymptotic expansions of the null and non-null distributions of T_W and T_L are obtained when n is large. Asymptotic expressions of those powers are also obtained. It is shown that the powers of them are coincident up to the order n^{-1} when κ is unknown.

Key words and phrases: Asymptotic expansion, central limit theorem, Langevin distribution, likelihood ratio statistic, Watson statistic, power comparison.