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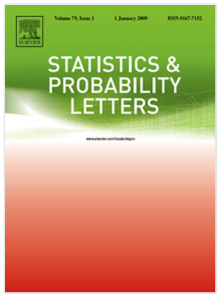

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On a robustness property of the Rayleigh and Bingham tests of uniformity

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Abstract

It is shown that the standardized versions of the Rayleigh and Bingham statistics converge in distribution to standard normal random variables as the sample size and the number of variables both approach infinity.

Keywords: High dimensionality; uniform distribution.

1. Introduction

The most basic distribution for a random vector on the unit m-sphere is the uniform distribution. Consequently, it is often of interest to test the hypothesis that a given sample of independent unit vectors comes from a population having this uniform distribution. Numerous statistics have been proposed for use in such a test and a review of most of these

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