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On runs tests for directional data and their local and asymptotic optimality properties

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Abstract

Summary : In the present talk, we tackle the problem of detecting serial correlation in the context of directional data. Motivated by a real data example involving sunspots locations, we define a concept of runs properly adapted to the directional context.

We then show that tests based on the latter runs enjoy some local and asymptotic property against local alternatives with serial dependence. We compute the finite sample performances of our tests using Monte Carlo simulations and show their usefulness on a real data illustration that involves the analysis of sunspots locations for various solar cycles.