

# Early detection of short circuit between turns in stator winding of induction machines via multivariate statistics

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**Abstract :** Online monitoring of induction machine health is of increased interest, as the industrial processes that depend on the machines becomes more complex and as performance to cost ratio of monitoring technology. Several efforts have been directed towards developing methods that use the conventional signal processing and pattern classification techniques. This paper focuses on fault diagnosis in induction machines operating under transient conditions. A new tool of anomaly detection based on multi-scale entropy MSE of Park vector approach and information theory combined with current trajectory mass center with principal component analysis (PCA) are proposed. The faults study in this paper is short circuit between turns in stator winding of induction machine. Simulation results show that the proposed method are able to detect short circuit between turns in stator winding of induction machine in the permanent period.

**Keywords :** Induction machine, Fault Diagnosis, Multi-scale entropy, principal component analysis, Current trajectory mass center