

## **EXTENTION OF ROUTH'S STABILITY CRITERION FOR THE ANALYTIC CONDITIONS OF SPONTANEOUS SELF EXCITATION IN INDUCTION GENERATORS**

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### **ABSTRACT**

The analysis of self excitation is important due to the need to protect the machines from over speeding and over voltages when accidentally disconnected. In this paper an algebraic criterion for deriving the analytic conditions of spontaneous self excitation is formulated by extending the Routh's stability criterion. The mathematical analysis of Induction generators gives rise complex coefficient polynomials. For the stability analysis of equations with complex coefficients, the Routh's stability criterion is extended using modified Routh's table. In this paper an algebraic criterion named as Sign pair criterion is developed which makes the analysis simple.

**KEYWORDS:** Induction Generators, Spontaneous Excitation, Stability Analysis, Complex Coefficients, Sign Pair Criterion