

## Estimation of Synchronous Machine Synchronizing and Damping Torque Coefficients

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**Abstract :** Synchronizing and damping torque coefficients of a synchronous machine can give a quite clear picture for machine behavior during transients. These coefficients are used as a power system transient stability measurement. In this paper, a crow search optimization algorithm is presented and implemented to study the power system stability during transients. The algorithm makes use of the machine responses to perform the stability study in time domain. The problem is formulated as a dynamic estimation problem. An objective function that minimizes the error square in the estimated coefficients is designed. The method is tested using practical system with different study cases. Results are reported and a thorough discussion is presented. The study illustrates that the proposed method can estimate the stability coefficients for the critical stable cases where other methods may fail. The tests proved that the proposed tool is an accurate and reliable tool for estimating the machine coefficients for assessment of power system stability.

**Keywords :** optimization, estimation, synchronous, machine, crow search

**Conference Title :** ICEPEECS 2019 : International Conference on Electric Power Engineering and Energy Conversion Systems

**Conference Location :** Vienna, Austria

**Conference Dates :** December 26-27, 2019