

# **Abstract**

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## **MODELING and SIMULATION OF SENSORLESS CONTROL OF PMSM WITH LUENBERGER ROTOR POSITION OBSERVER and SUI PID CONTROLLER**

This paper presents an investigation and evaluation of the performance of the surface Permanent Magnet Synchronous Motor drive under the Simplified Universal Intelligent PID controller (SUI PID). The estimation of the rotor position and the angular speed in dynamic rate were derived by the use of the Luenberger state observer for currents and MRAS (Model Reference Adaptive System) observer. It also shows how to use a Luenberger state observer in a field oriented control (FOC) scheme to implement a sensorless vector control strategy. The mathematical descriptions of the system and simulation results have been presented in this paper.