

Abstract—

Control of commutation of switched reluctance (SR) motor has been an area of interest for researchers for some time now with mixed successes in addressing the inherent challenges. New technologies, processing schemes and methods have been adopted to make sensorless SR drive a reality. There are a number of conceptual, offline, analytical and online solutions in literature that have varying complexities and achieved equally varying degree of robustness and accuracies depending on the method used to address the challenges and the SR drive application. Magnetic coupling is one such challenge when using active probing techniques to determine rotor position of a SR motor from stator winding. This paper studies the effect of back-of-core saturation on the detected rotor position and presents results on measurement made on a 4- phase SR motor. The results shows that even for a four phase motor which is excited one phase at a time and using the electrically opposite phase for active position probing, the back-of-core saturation effects should not be ignored.

Keywords—Sensorless, SR motor, saturation effects, detection