

Active Stabilisation of a PMSM Drive System for Aerospace Applications

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Abstract—Based on the d-q model of a permanent magnet synchronous motor drive, analytical expressions are derived for the small-signal input admittance of the system, which allow the examination of negative input admittance related instabilities. A compensating function is added to the control system to eliminate the instability effects and the analytical models are used to establish a design procedure. Saber simulations are used to validate the analysis and the operation of the stabilising controller.