

H-Infinity Controller Design for the Switched Reluctance Machine

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Abstract : The switched reluctance machine (SRM) has undeniable qualities in terms of low cost and mechanical robustness. However, its highly nonlinear character and its uncertain parameters justify the development of complicated controls. In this paper, authors present the design of a robust H-infinity current controller for an 8/6 SRM with taking into account the nonlinearity of the SRM and with rejection of disturbances. The electromagnetic torque is indirectly regulated through the current controller. To show the performances of this control, a robustness analysis is performed by comparing the H-infinity and PI controller simulation results. This comparison demonstrates better performances for the presented controller. The effectiveness and robustness of the presented controller are also demonstrated by experimental tests.

Keywords : current regulation, experimentation, robust H-infinity control, switched reluctance machine

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