

State Feedback Control of DC-DC Converter Using LQR Integral Controller and Kalman Filter Observer

D.Taibi, T.AMIEUR, M.Bechoaut, M.Sedraoui, S.KAHLA

Abstract: In this paper, the linear state feedback control using LQR controller for a DC/DC converter in the case of negative voltages topology is presented in order to achieve a particular desired behavior. To guarantee a zero steady-state error, we introduce an integral action, which will work out this problem by assuring that the steady-state error will end up to zero. For filtering and state estimation with a low cost and less complexity a state observer is obtained based a Kalman Filter observer. Detailed simulation study is presented to demonstrating the robustness and effectiveness of the proposed control scheme.

Keywords : Linear quadratic regulator, DC/DC Buck-Boost Converter, Kalman filter, Static error