عنوان مقاله:

Application of a New Multivariable Sliding Mode Controller for the Single Machine Infinite Bus Systems

محل انتشار:

دومین کنفرانس بین المللی الکترونیک قدرت و سیستم های درایو (سال: 1389)

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خلاصه مقاله:

This paper presents two multivariable nonlinear stabilizers, designed for a single machine infinite bus (SMIB) modeled by a standard ninth-order model. Multivariable feedback linearization (MFBL) and multivariable sliding mode control (MSMC) are proposed to regulate the output voltage and track the reference rotor angle at post-fault conditions. It is the first time that The MSMC method is designed and simulated to ensure both the stability of power system and voltage regulation despite of model uncertainties. An appropriate sliding surface has been found to achieve the desired aims. The proposed sliding mode controller has been simulated on the SMIB in the presence of a large disturbance, namely, a symmetrical three-phase short circuit fault at the terminal of the machine, and compared to the performance of the MFBL controller. Simulation results show that the MSMC technique has better performance to improve transient stability and voltage regulation in comparison with the MFBL controller.

کلمات کلیدی:

Multivariable Feedback Linearization Control (MFBLC), Multivariable Sliding Mode Control (MSMC), Single Machine (Infinite Bus (SMIB