

## عنوان مقاله:

Adaptive Backstepping MPPT Controller Design of PMSG in a Wind Energy Conversion System

## محل انتشار:

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## خلاصه مقاله:

In this paper a Lyapunov based nonlinear adaptive controller is adopted in order to implement maximum power point tracking (MPPT) algorithm for permanent magnet synchronous generator (PMSG) based wind turbines. This approach is based on newly developed adaptive backstepping controller which gains a great attention in nonlinear control systems, due to its capability to derive the control law and a stable Lyapunov function, step by step. At first, Input-output feedback linearization control law is introduced. Although this method provides a simple and fast tracking, it doesn't seem to be effective in wind energy conversion systems with large amount of uncertainties because it is based on exact cancellation of nonlinear terms. The adaptive backstepping control system is then designed in presence of resistor uncertainty as well as mechanical torque disturbance, which is the most concerned uncertainty in wind turbines. Simulation results validate performance of proposed adaptive backstepping control in maximum power extraction from wind turbine.

## کلمات کلیدی:

Adaptive backstepping control, MPPT, Permanent Magnet synchronous Generator, Wind Turbine

## لینک ثابت مقاله در پایگاه سیویلیکا:

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