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核动力堆热功率跟踪系统的自校正模型算法控制

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摘要 针对核动力堆控制系统这一带不确定参数及干扰的复杂非线性系统 ,本工作用自校正模型算法控制原理提出了一种动力堆热功率跟踪控制的方法。该方法克服了一般多步模型算法控制律所存在的由于模型估计不准或模型参数大幅度变化引起系统动态特性和控制质量变坏的缺点。通过仿真 ,将本方法与一般多步模型算法控制相比较 ,结果证明了该方法可使系统具有更强的鲁棒性和更好的动态品质。

关键词 核反应堆 自校正模型算法控制 系统仿真

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Self-tuning Model Algorithmic Control of Thermal Power Tracking System for the Nuclear Reactor

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Abstract The nuclear reactor is a complex nonlinear system with uncertain parameters and disturbances. Based on the self tuning model algorithmic control principle, a new thermal power tracking control method for the nuclear reactor is presented. The method can overcome the bad control quality of the normal multi step model algorthmic control method, while the big variation of the system parameters occurs or the estimated model is inaccurate. After comparing with the normal multi step model algorithmic control method, the simulation results show that the method presented in the paper makes the nuclear reactor system have stronger robustness and better performances.

Key words nuclear reactor self tuning model algorithmic control system simulation

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