

Intelligent PD-Type Fuzzy Controller Design for Mobile Satellite Antenna Tracking System with Parameter Variations Effect

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Abstract

This research applied both the traditional and the fuzzy control methods for mobile satellite antenna tracking system design. Firstly, the antenna tracking and the stabilization loops were designed according to the traditional bandwidth and phase margin requirements. However, the performances would be degraded if the tracking loop gain is reduced due to parameter variations. On the other hand a PD-type fuzzy controller was also applied for tracking loop design. It can be seen that the system performances obtained by the fuzzy controller were better for both low and high antenna tracking loop gains, and the tracking loop gain parameter variations effect can be reduced.

Keyword : antenna tracking loop; stabilization loop; PD-type fuzzy controller; PI compensator