# Intelligent Mobile Satellite Antenna Tracking System Design

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## Abstract

This research applied both the traditional and the fuzzy control methods for mobile satellite antenna tracking system design. The antenna tracking and the stabilization loops were designed firstly according to the bandwidth and phase margin requirements. However, the performance would be degraded if the tacking loop gain is reduced due to parameter variation. On the other hand a Proportion and Derivative (PD) type of fuzzy controller was also applied for tracking loop design. It can be seen that the system performance obtained by the fuzzy controller was better for low antenna tracking gain. Thus this research proposed an adaptive law by taking either traditional or fuzzy controllers for antenna tracking system depending on the tacking loop gain, then the tracking gain parameter variation effect can be reduced.

Keyword：Antenna tracking loop, stabilization loop, fuzzy controller, PI compensator.