移動衛星天線追蹤迴路增益有參數變化時之智慧型控器設計

張博光,林君明
通訊工程學系
工學院
jmlin@chu.edu.tw

摘要

This research applied both traditional and fuzzy control methods for mobile satellite antenna tracking system design.
The detailed block diagram of a satellite antenna tracking system is very lousy and difficult to obtain the key parameters
for analyses and simulation. Thus a simplified model of antenna pitching or yawing control system is applied to speed
up the design and obtain the key parameters. 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 tacking loop gain is reduced due to parameter variations. On the other hand a PD type fuzzy controller was also
applied for design. It can be seen that the 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.

關鍵字：antenna tracking loop, stabilization loop, fuzzy controller, PI compensator