

TABLE II
SUMMARY OF RESULTS FOR THE SOFT LANDING EXAMPLE

Control Policy	Optimal Control with Known Parameters	CE Control with Unknown Parameters	Dual Control with Unknown Parameters
Average cost	15	104	28
Maximum cost in a sample of 20 runs	35	445	62
Standard deviation of the cost	9	114	11
Average miss distance squared	28	192	32
Weighted cumulative control energy prior to final stage	1	7	12

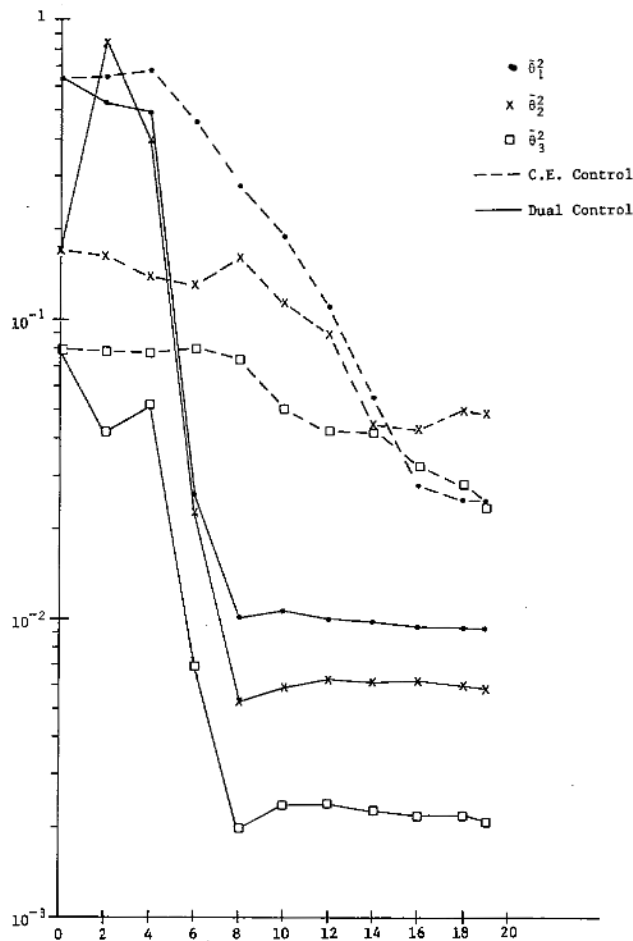


Fig. 5. Average estimation error squared in $\theta_1, \theta_2, \theta_3$ for the soft landing example.

point in the state space, while the aim before was to hit a surface. Therefore, it should be expected that the average cost is higher than in the previous example. This is seen to hold true, as shown in Tables I and II, for the dual control and the optimal control with known parameters. However, for CE control, it does not hold true. This may look strange at first sight, but careful analysis of the simulation will offer an explanation for this.

Table II indicates the improvement of dual control over CE control, both in average performance and reliability. The terminal miss distance squared for the dual control is

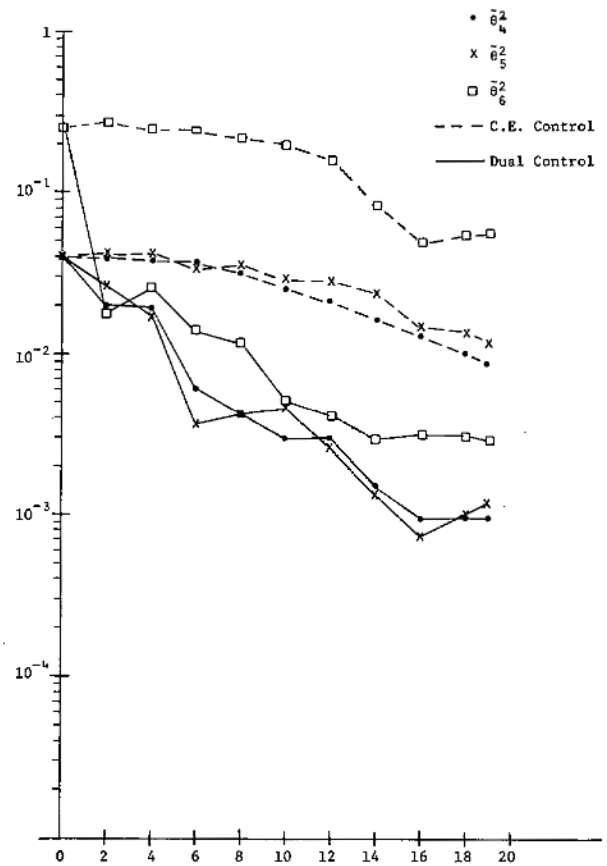


Fig. 6. Average estimation error squared in $\theta_4, \theta_5, \theta_6$ for the soft landing example.

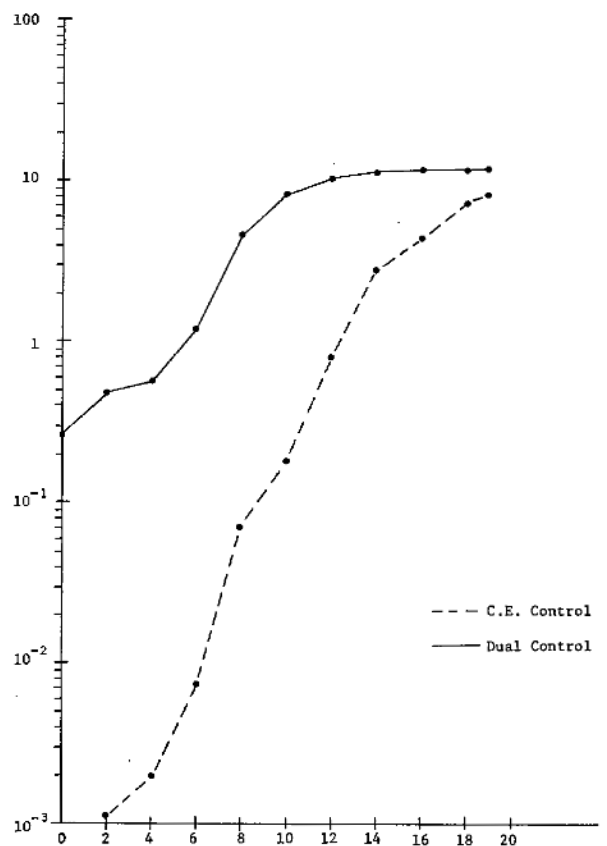


Fig. 7. Average cumulative control energy for the soft landing example.