

TABLE OF CONTENTS

	page
1. Introduction	1
2. Liapunov's direct method	7
3. Linear systems $x' = Ax$.	13
4. An algorithm for computing A^n .	19
5. A characterization of stable matrices. Computational criteria.	24
6. Liapunov's characterization of stable matrices. A Liapunov function for $x' = Ax$.	32
7. Stability by the linear approximation.	38
8. The general solution of $x' = Ax$. The Jordan Canonical Form.	40
9. Higher order equations. The general solution of $\psi(z)y = 0$.	45
10. Companion matrices. The equivalence of $x' = Ax$ and $\psi(z)y = 0$.	51
11. Another algorithm for computing A^n .	66
12. Nonhomogeneous linear systems $x' = Ax + f(n)$. Variation of parameters and undetermined coefficients.	70
13. Forced oscillations.	84
14. Systems of higher order equations $P(z)y = 0$. The equivalence of polynomial matrices.	87
15. The control of linear systems. Controllability.	94
16. Stabilization by linear feedback. Pole assignment.	107
17. Minimum energy control. Minimal time-energy feedback control.	117
18. Observability. Observers. State estimation. Stabilization by dynamic feedback.	125
References	147
Index	149