

论文

多变量系统内模原理的频域方法

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摘要 在时域里,加拿大学者 Francis,B.A.和 Wonham,W.M.已经讨论了多变量系统的内模原理,得到了比较完整的结果,引起了国内外学者的重视.近年来,国内外不少学者对内模原理的频域形式给予了足够的重视.本文从频域观点出发,对用多项式系...

关键词

分类号

THE FREQUENCY METHODS OF INTERNAL MODEL PRINCIPLE FOR THE MULTIVARIABLE SYSTEMS

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Abstract In this paper,we investigate by the frequency method the internal model principle for the multivariable systems in which the number of regulated output variables is not more than that of control inputs.The structurally stable properties without steady-state errors are analysed.Theorems 1—3 constitute the frequency form of the internal model principle of the time-invariant linear multivariable systems.The necessary and sufficient conditions for the existence of the structurally stable com-pensator without steady-state errors is given as $\text{Rank}(\begin{bmatrix} P_0(D_0) & R_0(D_0) \\ Q_0(D_0) & 0 \end{bmatrix})=l+m, \forall D_0 \in N(\alpha_1(D))$, where $\alpha_1(D)$ is the largest invariant factor of $N(D)$.The proof of the theorem 4 is structural and a design method of the structurally stable compensator without steady-state errors is provided at the same time.

Key words

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