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Time-Varying Sliding Modes for Second and Third Order Systems

Series: Lecture Notes in Control and Information Sciences

- Self-contained book presenting the main notions and concepts used in the field of variable structure systems and sliding mode control
- Presents a brief overview of the most important, recent results in the field of sliding mode control with time-varying switching surfaces
- Focuses on the sliding mode technique and especially on the problem of the sliding plane selection

A principal objective of control engineering is to design control systems which are robust with respect to external disturbances and modelling uncertainty. This objective may be well achieved using the sliding mode technique - which is the main subject of this monograph. More precisely, "Time-Varying Sliding Modes for Second and Third Order Systems" focuses on only one, but very important aspect of the sliding mode system design, i.e. the problem of the sliding plane selection. In this self-contained monograph, the main notions and concepts used in the field of variable structure systems and sliding mode control are presented before in the main part the issue of the switching surface design is discussed. This is done by considering two standard plants, which are very often encountered in the control engineering practice: the second and the third order nonlinear and possibly time-varying systems.

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