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Sliding order and sliding accuracy in sliding mode control. (English) Zbl 0789.93063
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Summary: The synthesis of a control algorithm that stirs a nonlinear system to a given manifold and keeps it within this constraint is considered. Usually, what is called sliding mode is employed in such synthesis. This sliding mode is characterized, in practice, by a high-frequency switching of the control. It turns out that the deviation of the system from its prescribed constraints (sliding accuracy) is proportional to the switching time delay. A new class of sliding modes and algorithms is presented and the concept of sliding mode order is introduced. These algorithms feature a bounded control continuously depending on time, with discontinuities only in the control derivative. It is also shown that the sliding accuracy is proportional to the square of the switching time delay.

MSC:

- 93C15 Control/observation systems governed by ordinary differential equations
- 93B50 Synthesis problems
- 93C10 Nonlinear systems in control theory

Cited in **2** Reviews
Cited in **272** Documents

Keywords:

[synthesis of a control algorithm](#); [sliding mode](#)

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