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Application of Fractional-Order Calculus to Robust Control

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Abstract:

Fractional-Order Calculus (FOC) deals with the derivatives and integrals of non-integer order. The impact of FOC on real-life applications has been rapidly growing lately, and the field of automatic control engineering is no exception to this trend. This thesis should be focused on FOC and its application to control systems with special emphasis to the robust control. The student should explore the basic theoretical background of the FOC and subsequently focus on its significance from the viewpoint of automatic control (e.g., the fractional-order controlled plants and the fractional-order controllers). Then, the main research aim should consist in the development, improvement or suitable application of a related robust analysis/synthesis method. The part of the work should also lie in the investigation of the existing software tools for fractional order systems and the creation of some own simulation tools/experiments.

Literature:

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