Abstract

The recent methods that guarantee the stability of the reduced-order models are Mihailov stability, improved Pade approximation and truncation, improved generalized pole clustering, moment matching and salp swarm optimization. Further, these methods could overcome the limitations such as non-uniqueness, pole clustering, gain adjustment and difficulty to maintain the dominant roots in the lower order system for non-minimum higher order plants. This research emphasizes the design of the proposed compensating algorithm by using an additional open loop zero for the stable reduced-order models of large-scale single-input single-output linear time-invariant continuous time systems. The results of the proposed algorithm are compared with the existing compensating methods and the design is validated and illustrated numerically.

References

Ahamed N, Sikander A, Singh G (2022a) A novel reduction approach for linear system approximation. *Circuits, Systems, and Signal Processing* 41: 700–724.

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