Abstract

A Big Bang-Big Crunch Optimization Algorithm (BBBCOA) is availed in the design of PID controller. A sixth order system is reckoned and is scaled down to second order with the help of BB-BCOA, Particle Swarm Optimization (PSO), Genetic Algorithm (GA) Hankel Norm Approximation (HNA). Later, a controller is designed by approximate model matching technique in the Pade sense. The procedure followed is justified by the step responses of the closed loop transfer functions obtained. In the indirect case, initially controller is designed for the original system under test and the overall closed loop model is reduced to third order. The concept is exemplified and the responses are seen to be comparable.
PID Controller Design using BB-BCOA Optimized Reduced Order Model

References

- Singh Nidhi, "Reduced order modelling and controller design", Ph D. Thesis, Indian Institute of Technology Roorkee, Roorkee, India, 2007
- Pavel Y. Tabakov, "Big Bang–Big Crunch Optimization Method in Optimum Design
of Complex Composite Laminates\"; World Academy of Science, Engineering and Technology, 2011.


- Prasad Rajendra, \"Analysis and design of control Systems using reduced order models\"; Ph. D Thesis, University of Roorkee, Roorkee, India, 1989

**Index Terms**

Computer Science  
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**Keywords**

Model Order Reduction  
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