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Meromorphic Observer-Based Pole Assignment in Time Delay Systems

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Abstract: The paper deals with a novel method of control system design which applies meromorphic transfer functions as models for retarded linear time delay systems. After introducing an auxiliary state model a finite-spectrum observer is designed to close a stabilizing state feedback. The observer finite spectrum is the key to implement a state feedback stabilization scheme and to apply the affine parametrization in controller design. On the basis of the so-called RQ-meromorphic functions an algebraic solution to the problem of time-delay system stabilization and control is presented that practically provides a finite spectrum assignment of the control loop.

Keywords: retarded time-delay system; meromorphic transfer function; reduced-order observer; state feedback; affine parametrization of stabilizing controllers;

AMS Subject Classification: 93C05; 93B55 ; 93D15;

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