

Research highlights

“A novel approach to stability of interval delayed systems with nonlinear perturbations”

1. Construct a new delay-dependent LK functional to further reduce the conservatism than some existing ones, by using a variable delay partitioning approach.
2. Estimate a tight upper bound of the derivative of the LK functional by utilizing suitably some integral inequality and convex combination technique, without involving any direct approximation of the uncertain delay terms in the derivation.
3. Obtain some delay-fractional-dependent stability criteria for delayed systems with nonlinear perturbations.
4. Yield less conservatism by developing a new delay-fractional LK functional and involving no any direct approximation of the uncertain delay terms in the derivation, and without using any redundant free-weighting matrices based on Leibniz-Newton formula.