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Stabilization in a chemostat with sampled and delayed measurements and uncertain growth functions. (English) [Zbl 1357.93082]

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Summary: We provide a new control design for chemostats, under constant substrate input concentrations, using piecewise constant delayed measurements of the substrate concentration. Our growth functions can be uncertain and are not necessarily monotone. The dilution rate is the control. We use a new Lyapunov approach to derive conditions on the largest sampling interval and on the delay length to ensure asymptotic stabilization properties of a componentwise positive equilibrium point.

MSC:
93D20 Asymptotic stability in control theory
93D21 Adaptive or robust stabilization
93C57 Sampled-data control/observation systems
93C95 Application models in control theory

Keywords:
output feedback; stabilization; delay; sampling

Full Text: DOI

References:


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