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*Stabilization of a Chemostat Model with Haldane Growth Functions and a Delay in the Measurements.*

The stabilization of equilibria in chemostats with measurement delays is a complex and challenging problem, and is of significant ongoing interest in bioengineering and population dynamics. In this paper, we solve an output feedback stabilization problem for chemostat models having two species, one limiting substrate, and either Haldane or Monod growth functions. Our stabilizing feedbacks depend only on (1) a given linear combination of the species concentrations, which are measured with an unknown time delay and (2) a known upper bound for the delay. Our feedbacks ensure persistence of both species. Our work is based on a Lyapunov-Krasovskii argument. (Received September 11, 2010)