

Time Delay and Noise Explaining the Behaviour of the Cell Growth In Fermentation Process

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ABSTRACT

This paper proposes to investigate the interplay between time delay and external noise in explaining the behaviour of the microbial growth in batch fermentation process. Time delay and noise are modelled jointly via stochastic delay differential equations (SDDEs). The typical behaviour of cell concentration in batch fermentation process under this model is investigated. Milstein scheme is applied for solving this model numerically. Simulation results illustrate the effects of time delay and external noise in explaining the lag and stationary phases, respectively for the cell growth of fermentation process.

DOI: 10.1063/1.4907493