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Abstracts of Short Communications and Posters

Section:

16. Applications

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Optimal control of biotechnological process.
One special problem of optimal control for system of three kinetic nonlinear differential equation describing the formation of production flow x and pollution flow z from inflow of raw material y is considered. This is the problem of optimal harvest with contragent v, that is responsible for cleaning of flow out of pollution. The system contains two controls (u is the rate of watering, v is the rate of contragent inflow), s is the cost parameter which connects the cost of production ux and expenses of neutralizing contragent v. On the basis of sufficient conditions of optimality the existence of solution is proved. The problem on steady existence of kinetic system is considered. it is shown, that all stationary points are asymptotically stable by Lyapunov. Optimal stationary points are obtained as solution of parametric problem of nonlinear programming. Their dependence on conditions of optimazing function is investigated.