

Impulse Effect on the Mathematical Models with Delay

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It is now recognized that the theory of impulsive differential equations appears as a natural description of several real processes subject to certain perturbations whose duration is negligible in comparison with the duration of the process. Mathematical models involving impulse effects have recently been introduced in population dynamics such as vaccination, population ecology, drug treatment, the chemostat, the tumor-normal cell interaction, etc. On the other hand, its well known that delay differential equations with continuous time or discrete time play a very important role in modern applied mathematical models of real processes arising in physics, population dynamics, chemical technology and economics.

In this talk, we introduce impulsive differential equations as well as delay differential equations with piecewise constant argument. Asymptotic behavior of the solutions of an impulsive delay population model will be investigated. The results are compared with the non-impulsive case. Finally, we give some examples to illustrate the results.

Keywords. Impulse, delay, piecewise constant argument, population model.