

Delayed differential equation with non-constant delay in biology

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Abstract

Differential equations with delayed argument have numerous applications in biology, like e.g. in immunology, whether of epidemiology. These equation has the form

$$\frac{dx}{dt} = f(x(t), x(t - \tau))$$

where the set X of values of function x may be also multidimensional. We shall present the applications of more general equations i. e. equations of the form

$$\frac{dx}{dt} = F(x_t)$$

where F is defined on function space and $x_t : (-r, 0] \rightarrow X$ is defined by the formula

$$x_t(s) = x(t + s).$$

The examples of application of such equations will be presented. To such equations the classical method of steps cannot be used.

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