



On uniform continuous dependence of solution of Cauchy problem on a parameter

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Suppose that an n -dimensional Cauchy problem $\frac{dx}{dt}=f(t,x,\mu)$ ($t \in I$, $\mu \in M$), $x(t_0)=x^0$ satisfies the conditions that guarantee existence, uniqueness and continuous dependence of solution $x(t,t_0,\mu)$ on parameter μ in an open set M . We show that if one additionally requires that family $\{f(t,x,\mu)\}_{(t,x)}$ is equicontinuous, then the dependence of solution $x(t,t_0,\mu)$ on parameter $\mu \in M$ is uniformly continuous.

An analogous result for a linear $n \times n$ -dimensional Cauchy problem $\frac{dX}{dt}=A(t,\mu)X+\Phi(t,\mu)$ ($t \in I$, $\mu \in M$), $X(t_0,\mu)=X^0(\mu)$ is valid under the assumption that the integrals $\int_{t_0}^t |A(t,\mu_1)-A(t,\mu_2)| dt$ and $\int_{t_0}^t |\Phi(t,\mu_1)-\Phi(t,\mu_2)| dt$ can be made smaller than any given constant (uniformly with respect to $\mu_1, \mu_2 \in M$) provided that $|\mu_1 - \mu_2|$ is sufficiently small.

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