$$\int_{G_\Delta} (\dot{x}_i(t) - f_i(t, \psi(t)))\,\mathrm{d}t = \int_{G_\Delta \cap T''} (\dot{x}_i(t) - f_i(t, \psi(t)))\,\mathrm{d}t +$$

$$+ \int_{G_\Delta - T''} (\dot{x}_i(t) - f_i(t, \psi(t)))\,\mathrm{d}t \geqq \int_{G_\Delta \cap T''} \varepsilon_t\,\mathrm{d}t + \int_{G_\Delta - T''} s_i(t)\,\mathrm{d}t$$

holds for every $\psi(t)$ satisfying (1), (2), (3), (5) (cf. (18), (21)). The inequality (19) implies

$$(22) \qquad \int_{G_j} (\dot{x}_i(t) - f_i(t, \psi(t)))\,\mathrm{d}t > b' > 0 \quad \text{for every} \quad \psi(t)$$

satisfying (1), (2), (3), (5). We assume that $x(t)$ is $V$-solution. Therefore for a given $\varepsilon > 0$, $\varepsilon < \min(1/k, \frac{1}{2}b')$ and $N \subset G$, $\mu(N) = 0$ there exists a function $\psi(t)$ satisfying (1)–(5). Let $\hat{\psi}(t)$ satisfy the properties (1), (2), (3), (5). Denoting $\varphi(t) = \dot{x}_i(t) - f_i(t, \hat{\psi}(t))$ we can write the last inequality (22) in the form $\int_{G_j} \varphi(t)\,\mathrm{d}t > b' > 0$. Let $G_j = (\tau_1, \tau_2) \subset T$. Now due to (4) $\left|\int_{t_1}^{\tau_1} \varphi(\tau)\,\mathrm{d}\tau\right| < \varepsilon$ must hold for $\tau_1$, hence $-\varepsilon < \int_{t_1}^{\tau_1} \varphi(\tau)\,\mathrm{d}\tau < \varepsilon$ and $\int_{t_1}^{\tau_2} \varphi(\tau)\,\mathrm{d}\tau = \int_{t_1}^{\tau_1} \varphi(\tau)\,\mathrm{d}\tau + \int_{\tau_1}^{\tau_2} \varphi(\tau)\,\mathrm{d}\tau > \int_{t_1}^{\tau_1} \varphi(\tau)\,\mathrm{d}\tau + b' > -\varepsilon + b' > \varepsilon$ holds because the value $\varepsilon > 0$ was defined in (20) so that $2\varepsilon < b'$. The inequality $\left|\int_{t_1}^{\tau_2} \varphi(\tau)\,\mathrm{d}\tau\right| < \varepsilon$ does not hold for $\tau_2$ which is a contradiction to the inequality (4).

This contradiction completes the proof of the theorem.

### *References*


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