Dynamical equivalence of quasiliner dynamic equations on time scale

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We consider regressive and rd-continuous dynamical systems on an unbounded above and below time scale $\mathbb{T}$ in Banach space:

$$x^{\triangle} = A(t)x(t) + f_1(t, x(t)), \tag{1}$$

$$x^{\triangle} = A(t)x(t) + f_2(t, x(t)) \tag{2}$$

where

$$|f_i(t,x) - f_i(t,x')| \leq \varepsilon(t)|x - x'|, \quad i = 1, 2,$$
$$\sup_x |f_1(t,x) - f_2(t,x)| \leq N(t) < +\infty.$$

Suppose that regressive and rd-continuous dynamical system $x^{\triangle} = A(t)x(t)$ has a Green type map $G(t, s)$.

Theorem 1. *If*

$$\sup_{t\in\mathbb{T}} \int_{-\infty}^{+\infty} |G(t, \sigma(s))| N(s) \triangle s < +\infty \tag{3}$$

$$\sup_{t\in\mathbb{T}} \int_{-\infty}^{+\infty} |G(t, \sigma(s))| \varepsilon(s) \triangle s = q < 1 \tag{4}$$

then dynamical systems (1) *and* (2) *are globally dynamical equivalent.*

This work was partially supported by the grant No. 345/2012 of the Latvian Council of Science.

[1] A. Reinfelds, A., Šteinberga, Dz., Dynamical equivalence of quasilinear equations, *International Journal of Pure and Applied Mathematics* 98 (2015), 355–364.