Márquez Albés, Ignacio


Summary: In this paper we continue the study of the linear equation with Stieltjes derivatives in M. Frigon and R. López Pouso [Adv. Nonlinear Anal. 6, No. 1, 13–36 (2017; Zbl 1361.34010)]. Specifically, we revisit some of the results there presented, removing some of the required conditions as well as amending some mistakes. Furthermore, following the classical setting, we use the connection between the linear equation and the Gronwall inequality to obtain a new version of this type of inequalities in the context of Lebesgue-Stieltjes integrals. From there, we obtain a uniqueness criterion for initial value problems.

MSC:
34A30 Linear ordinary differential equations and systems
26A24 Differentiation (real functions of one variable): general theory, generalized derivatives, mean value theorems
26D10 Inequalities involving derivatives and differential and integral operators
34A12 Initial value problems, existence, uniqueness, continuous dependence and continuation of solutions to ordinary differential equations
34A34 Nonlinear ordinary differential equations and systems

Keywords:
Stieltjes integration; Stieltjes differentiation; linear equation; uniqueness; Gronwall inequality

Full Text: DOI