



Converses of Diamond Alpha Pachpatte Type Dynamic Inequalities and Their Applications in Oscillation of Self Adjoint Linear Dynamic Equations

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Abstract

Reverse Pachpatte-type inequalities provide concave generalizations of the established Bennett-Leindler inequalities. By leveraging concavity, we establish reverse diamond-alpha Pachpatte-type dynamic inequalities. This work marks the first instance where converses of Pachpatte-type inequalities are derived within the framework of diamond-alpha time scale calculus, encompassing its special cases: delta and nabla calculi, as well as their continuous and discrete counterparts. Moreover a novel application of reverse Pachpatte type dynamic inequalities is developed to investigate oscillation of the second order linear self adjoint dynamic equations with mixed derivatives [1].

Keywords: The diamond-alpha time scale calculus, Hardy-Copson inequality, Bennett-Leindler inequality, Pachpatte's inequality, concavity.

References:

- [1] Z. Kayar, B. Kaymakçalan and N. N. Pelen, Diamond alpha Bennett-Leindler type dynamic inequalities and their applications. Math. Methods Appl. Sci. 45 (2022), no. 5, 2797–2819.