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Bounds of double integral dynamic inequalities in two independent variables on time scales.
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Summary: Our aim in this paper is to establish some explicit bounds of the unknown function in a certain class of nonlinear dynamic inequalities in two independent variables on time scales which are unbounded above. These on the one hand generalize and on the other hand furnish a handy tool for the study of qualitative as well as quantitative properties of solutions of partial dynamic equations on time scales. Some examples are considered to demonstrate the applications of the results.

MSC:

[26E70](#) Real analysis on time scales or measure chains
[26D20](#) Other analytical inequalities

Keywords:

[nonlinear dynamic inequalities](#); [quantitative properties](#); [partial dynamic equations on time scales](#)

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References:

- [1] M. Bohner and A. Peterson, Dynamic Equations on Time Scales, Birkhäuser, Boston, Mass, USA, 2001, An Introduction with Application. · [Zbl 0978.39001](#)
- [2] V. Kac and P. Cheung, Quantum Calculus, Springer, New York, NY, USA, 2001. · [Zbl 0986.05001](#)
- [3] V. Spedding, "Taming nature's numbers," New Scientist, pp. 28-31, 2003.
- [4] D. R. Anderson, "Nonlinear dynamic integral inequalities in two independent variables on time scale pairs," Advances in Dynamical Systems and Applications, vol. 3, no. 1, pp. 1-13, 2008.
- [5] E. Akin-Bohner, M. Bohner, and F. Akin, "Pachpatte inequalities on time scales," Journal of Inequalities in Pure and Applied Mathematics, vol. 6, no. 1, Article 6, pp. 1-23, 2005. · [Zbl 1086.34014](#)
- [6] W. N. Li, "Some Pachpatte type inequalities on time scales," Computers & Mathematics with Applications, vol. 57, no. 2, pp. 275-282, 2009. · [Zbl 1165.39301](#) · [doi:10.1016/j.camwa.2008.09.040](#)
- [7] W. N. Li, "Some new dynamic inequalities on time scales," Journal of Mathematical Analysis and Applications, vol. 319, no. 2, pp. 802-814, 2007. · [Zbl 1103.34002](#) · [doi:10.1016/j.jmaa.2005.06.065](#)
- [8] S. H. Saker, "Some nonlinear dynamic inequalities on time scales and applications," Journal of Mathematical Inequalities, vol. 4, no. 4, pp. 561-579, 2010. · [Zbl 1207.26034](#)
- [9] S. H. Saker, "Some nonlinear dynamic inequalities on time scales," Mathematical Inequalities and Applications, vol. 14, pp. 633-645, 2011. · [Zbl 1222.26032](#)
- [10] C. D. Ahlbrandt and C. Morian, "Partial differential equations on time scales," Journal of Computational and Applied Mathematics, vol. 141, no. 1-2, pp. 35-55, 2002, Dynamic equations on time scale. · [Zbl 1134.35314](#) · [doi:10.1016/S0377-0427\(01\)00434-4](#)
- [11] J. Hoffacker, "Basic partial dynamic equations on time scales," Journal of Difference Equations and Applications, vol. 8, no. 4, pp. 307-319, 2002. · [Zbl 1003.39018](#) · [doi:10.1080/10236190290017379](#)
- [12] B. Jackson, "Partial dynamic equations on time scales," Journal of Computational and Applied Mathematics, vol. 186, no. 2, pp. 391-415, 2006. · [Zbl 1081.39013](#) · [doi:10.1016/j.cam.2005.02.011](#)
- [13] M. Bohner and G. Sh. Guseinov, "Partial differentiation on time scales," Dynamic Systems and Applications, vol. 13, no. 3-4, pp. 351-379, 2004. · [Zbl 1090.26004](#)
- [14] M. Bohner and G. Sh. Guseinov, "Double integral calculus of variations on time scales," Computers & Mathematics with Applications, vol. 54, no. 1, pp. 45-57, 2007. · [Zbl 1131.49019](#) · [doi:10.1016/j.camwa.2006.10.032](#)
- [15] P. Wang and P. Li, "Monotone iterative technique for partial dynamic equations of first order on time scales," Discrete Dynamics in Nature and Society, vol. 2008, Article ID 265609, 7 pages, 2008. · [Zbl 1149.35334](#) · [doi:10.1155/2008/265609](#)
- [16] D. R. Anderson, "Young's integral inequality on time scales revisited," Journal of Inequalities in Pure and Applied Mathematics, vol. 8, no. 3, Article 64, p. 5, 2007. · [Zbl 1197.26022](#)
- [17] D. R. Anderson, "Dynamic double integral inequalities in two independent variables on time scales," Journal of Mathematical Inequalities, vol. 2, no. 2, pp. 163-184, 2008. · [Zbl 1170.26306](#)

- [18] R. A. C. Ferreira and D. F. M. Torres, "Some linear and nonlinear integral inequalities on time scales in two independent variables," *Nonlinear Dynamics and Systems Theory*, vol. 9, no. 2, pp. 161-169, 2009. · [Zbl 1180.26020](#)
- [19] W. N. Li, "Nonlinear integral inequalities in two independent variables on time scales," *Advances in Difference Equations*, vol. 2011, Article ID 283926, 11 pages, 2011. · [Zbl 1213.26028](#) · [doi:10.1155/2011/283926](https://doi.org/10.1155/2011/283926)
- [20] D. S. Mitrinović, J. E. Pečarić, and A. M. Fink, *Classical and New Inequalities in Analysis*, vol. 61, Kluwer Academic, Dodrecht, The Netherlands, 1993. · [Zbl 0771.26009](#)

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