

Bessel functions on time scales

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We will define and investigate both delta- and nabla-Bessel functions on arbitrary time scales, generalizing work from [1-3] which introduced the discrete ($T=\mathbb{Z}$) analogue and showed its utility in solving partial difference equations. We will investigate the existence of the Bessel functions and the challenges in finding a second-order dynamic equation that they solve. References[1] M. Bohner, T. Cuchta. The Bessel difference equation. Proc. Amer. Math. Soc. 145 (2017), no. 4, 1567–1580.[2] A. Slavík. Discrete Bessel functions and partial difference equations. Journal of Difference Equations and Applications, 24(3) (2018), 425-437.[3] A. Bašić, L. Smajlović, Z. Šabanac. Discrete Bessel functions and discrete wave equation. Results in Mathematics, 79(5) (2024), 216.[4] T. Cuchta, A. Slavík. Bessel functions on time scales. Forthcoming.

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