Stability of Nonautonomous Neutral Variable Delay Difference Equation

Hai-Long Xing[1], Xiao-Zhu Zhong[1], Yan Shi[2*],
Jing-Cui Liang[1] and Dong-Hua Wang[1]

[1]*School of Science, Yanshan University,
Qinghuangdao 066004, China*
[2]*School of Information Science, Kyushu Tokai University,
9-1-1, Toroku, Kumamoto 862-8652, Japan*

Abstract: This paper studies the stability of a class of nonautonomous neutral delay difference equation. The case of several variable delays is mainly considered, and the sufficient conditions of uniform stability and uniform asymptotical stability are obtained. Some results with a constant delay in the literature are extended and improved.

Keywords: *Nonautonomous; neutral difference equations; stability.*

Mathematics Subject Classification (2000): 35D05, 35E05.