

## Unsaturated Solutions of A Nonlinear Delay Partial Difference Equation with Variable Coefficients

Xiangyu Zhu, Yuanhong Tao\*<sup>†</sup>

Department of Mathematics, College of Science, Yanbian University, Yanji, Jilin 133002

**Abstract:** By employing the concept and the properties of frequency measures of infinite double sequence and the concept of unsaturated solution of partial difference equations, the unsaturated solutions for the nonlinear partial difference equation with variable coefficients is discussed. Only using the concept of "frequency measure" of the level sets of the involved parameter sequences in equation, the sufficient conditions of the solutions to be unsaturated are presented, thus how frequent the solutions oscillate is well described.

**Keywords:** partial difference equation; frequency measure; unsaturated solution

---

\*This work is supported by Natural Science Foundation of China under number 11761073.

<sup>†</sup> Correspondence Author: Yuan-hong Tao, E-mail: [taoyuanhong12@126.com](mailto:taoyuanhong12@126.com)