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**Ting-Hui Yang\*** (thyang@mail.tku.edu.tw), 151 Ying-chuan Road Tamsui, Taipei County, Taiwan 25137, Taiwan, and **Cheng-Hsiung Hsu** (chhsu@math.ncu.edu.tw), No.300, Jhongda Rd., Jhongli City, Taiwan 32001, Taiwan. *Traveling Wave Solutions of Delayed Lattice Differential System in Lotka-Volterra Type*. Preliminary report.

In this work we consider the existence of traveling plane wave solutions of a class of delayed lattice differential system in Lotka-Volterra type. Employing the techniques of cross iteration method coupled with the explicit construction of upper and lower solutions in the theory of weak quasi-monotone dynamical systems, we obtain a critical speed, and show the existence of traveling plane wave solutions connecting two different equilibria when the wave speeds are less than the critical speed. (Received August 30, 2008)