Abstract

In this paper we shall give the generalization of a recently developed functional-analytic method for studying linear and non-linear, ordinary and partial, difference equations in the ℓ_p^1 and ℓ_p^2 spaces, $p \in \mathbb{N}$, $p \geq 1$. The method will be illustrated by use of three examples concerning a non-linear ordinary difference equation known as the Putnam equation, a non-linear partial difference equation of two variables arising in a problem of cardiac dynamics and, a linear partial difference equation of three variables describing the discrete Newton law of cooling in three dimensions.