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ON SOLUTIONS OF LINEAR DIFFERENCE EQUATIONS WITH INFINITE DELAY

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Abstract. The difference equation with infinite delay $(DE)_\varepsilon$ $x_{n+1} = Ax_n + \varepsilon \sum_{k=-\infty}^{n} R_{n-k} x_k$ is considered. Sufficient conditions for the existence of a unique solution are proved. An $O(\varepsilon)$-approximation of this solution for $-N \leq n \leq N$, $N > 0$, by the solution of the equation $(DE)_0$ is obtained.

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