

# Sufficient conditions for existence of a positive solution of discrete equations of $(k + 1)$ -st order

Jaromír Baštinec, Josef Diblík

Brno University of Technology, Czech Republic

bastinec@feec.vutbr.cz, diblik@feec.vutbr.cz, diblik.j@fce.vutbr.cz

The topic of our study is a delayed scalar discrete equation of  $(k + 1)$ -st order

$$\Delta u(n) = f(n, u(n), u(n-1), \dots, u(n-k)),$$

where  $f: Z_a^\infty \times R^{k+1} \rightarrow R$ ,  $Z_a^\infty := \{a, a+1, \dots, \infty\}$  and  $k \geq 1$  is an integer. Sufficient conditions are derived for the existence of at least one eventually positive solution, i.e. we prove that there exists a solution  $u = u(n)$  of given equation defined on  $Z_{a_1}^\infty$  where  $b$  is an integer such that  $b \geq a$  and

$$u = u(n) > 0, n \in Z_b^\infty.$$

## References

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