The ℓ_p-function on trees

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Abstract

A *p-value* of a sequence $\pi = (x_1, x_2, \ldots, x_k)$ of elements of a finite metric space (X, d) is an element x for which $\sum_{i=1}^{k} d^p(x, x_i)$ is minimum. The ℓ_p-function on X is defined to have domain the set of all finite sequences on X and $\ell_p(\pi) = \{x : x \text{ is a } p\text{-value of } \pi\}$. The Median Function and the Mean Function are the ℓ_p-functions with $p = 1$ and $p = 2$ respectively. In this note the ℓ_p-function on finite trees is characterized axiomatically.

Keywords: location function; ℓ_p-function; median function; mean function, tree.