

ABSTRACT. In Bouacida–Echi–Salhi 1999 and 2000, it was shown that spectral spaces are related to foliation theory. In this paper, we prove that spectral sets and spaces are also related to the relatively new research topic *combinatorics on words*, an area in discrete mathematics motivated in part by computer science.

Let A be a finite alphabet, A^* be the free monoid generated by A (i.e., the set of all finite words over A) and A^+ be the set of nonempty words over A . A nonempty word is called *primitive* if it is not a proper power of another word. Let u be a nonempty word; then there exist a unique primitive word z and a unique integer $k \geq 1$ such that $u = z^k$. The word z is called *the primitive root* of u and is denoted by $z = p_A(u)$.

By a *language* over an alphabet A , we mean any subset of A^* . A language will be called a *primitive language* if it contains the primitive root of all its elements.

The collection $\mathcal{T} := \{O \subseteq A^* \mid p_A^{-1}(O) \subseteq O\}$ defines a topology on A^* (which will be called the *topology of primitive languages*).

Call a \mathcal{PL} -space, each topological space X which is homeomorphic to A^+ (equipped with the topology of primitive languages) for some finite alphabet A .

The main goal of this paper is to prove that the one-point compactification of a \mathcal{PL} -space is a spectral space, providing a new class of spectral spaces in connection with combinatorics on words.