

Lapidus and Van Frankenhuysen developed a theory of fractal strings within $\mathbb{R}$. Their ideas naturally extend to metric spaces which are also topological groups. In this paper, we will focus on the specific case where the group is $(\mathbb{Z}_p, +)$, a Polish group with a metric defined by the p -adic absolute value $|\cdot|_p$. As this structure is not only a group but also a ring, it gives rise to a rich family of spectral strings related to affine varieties. We will introduce a new p -adic zeta function associated to these affine varieties, and examine some of its key properties, such as its rationality, and how the abscissa of convergence aligns with the Minkowski dimension of the variety, which will be defined as an extension of the Minkowski dimension for fractal strings. Additionally, we will present a closed formula for the zeta function as a p -adic integral.