Classical combinatoric deals with the set on natural numbers $\mathbb{N} = \{0, 1, 2, \dots\}$ and relations between its elements. There exists a useful interpretation on a number $n \in \mathbb{N}$ as the size (or the measure) of a population. This gives a possibility for clear intuitive interpretations of combinatorial objects, especially, in probabilistic applications, see Chapter II in [?]. Below we will use such terminology just as a language without any reference to specific aspects of the population theory.

From the very beginning, many combinatorial formulas have natural extensions from $\mathbb{N}$ to variables from $\mathbb{R}$. The latter, in particular, creates nice relations between the combinatoric and analysis, in particular, the difference calculus.

Having in mind the population interpretation, we have a natural possibility to extend our considerations to the case of spatially distributed populations that is well know concept in the study of biological and ecological models, see, e.g., [?]. As a result of this step, there appear the notion of a configuration space $\Gamma(X)$ which substitutes the set $\mathbb{N}$ and leads to rich and non-trivial extension of combinatorial structures. The location space is assumed to be a locally compact Polish space X. The aim of this paper is to show that many combinatorial notions have nice analogies in this spatial combinatoric. And even more, in several particular aspects these spatial objects may give now relations in the classical combinatoric.

Note that the notion of configuration spaces is well known and widely used in different branches of mathematics and applications. We just mention statistical physics of continuous systems, topology and spatial ecology. Configuration spaces contrary to $\mathbb{N}$ posses both a continuous topological properties and a discrete structures of any particular element. They have a natural differential geometry [?] and more specific structures related to the discrete nature [?]. Our aim is to develop another point of view to the already existing mathematical theory of configuration spaces. Namely, we would like to show that there exists very natural extension of combinatoric notions to this new level of spatially distributed objects.

The extension of the classical combinatoric to continuous variables is based on the embedding $\mathbb{N} \subset \mathbb{R}$. In the spatial case the role of such extension may use an embedding $\Gamma(X) \subset M(X)$ where $M(X)$ denotes the space of all (signed) Radon measures on X. Such extension is sufficient for combinatorial purposes. In the classical case, natural numbers give a measure of a population which is extended to the continuous values. The same is true for the spatial combinatoric. Any configuration may be interpreted as a discrete positive Radon measure on X that is the measure of a population. More generally, we may consider generic Radon measures as proper characteristic of extended populations. We will see that it will lead to a substitution of numeric objects of classical combinatoric to measure-valued ones.

Note, that for the case of the location space X which has properties of a smooth manifold there exists a possibility to do next extension to the space of generalized functions $\mathcal{D}'(X)$. It gives interesting relations of spatial combinatoric with general infinite dimensional analysis see, e.g. [**?**].

Let us describe the contents of presented paper.