Some Problems of Configuration on the Sphere

Masaharu TANEMURA

The Institute of Statistical Mathematics
4-6-7 Minami-Azabu, Minato-ku, Tokyo

Abstract

The surface of a sphere, which is a typical non-Euclidean space, possesses aspects different from the Euclidean space. Namely, the spherical surface is, firstly, finite in size (area) and, secondly, has no boundary different from a finite Euclidean planar region. Then, the problems of spatial patterns on the sphere present us an interesting class of research subjects having many applications to various fields of science.

We will consider, in the present paper, mainly two problems of configuration on the sphere. The random sequential packing of spherical caps is considered at first, some results of its computer experiment are shown for various radii of spherical caps, and then the comparison with regular packing of spherical caps is discussed. Secondly, the networks based on the spherical Voronoi tessellation are considered and the models for pattern formation of tessellation network are presented. A consideration of the optimal spherical network is also given as an application of our pattern formation model.

References

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