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Asymptotic expansions for generalized random polygons

There has been quite a lot of work done recently in various generalized models of random polytopes in convex bodies. One such model is when one takes n independent identically distributed uniform random points from a suitable convex body and considers the intersection of all congruent closed balls that contain the points. The resulting intersection is called a random ball-polytope (disc-polygon in the plane). In this talk we discuss the behavior of the vertex number of random disc-polygons. We prove series expansions for the expectation of the vertex number and area of random disc-polygons depending on the degree of smoothness of the boundary of the convex disc. Joint work with N. Montenegro (University of Szeged, Hungary).

Supported by the National Research, Development and Innovation Office - NKFIH K134814 grant. This research was also supported by project TKP2021-NVA-09. Project no. TKP2021-NVA-09 has been implemented with the support provided by the Ministry of Innovation and Technology of Hungary from the National Research, Development and Innovation Fund, financed under the TKP2021-NVA funding scheme.