

SERIES EXPANSIONS FOR GENERALIZED RANDOM POLYGONS

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We prove power series expansions for the expectations of the number of vertices and missed area of random L -convex polygons in planar convex bodies with sufficiently smooth boundaries. Random L -convex polygons arise as the intersection of all translates of a fixed convex set L that contain i.i.d. uniform random points from a suitable plane convex body K . Our results extend the asymptotic formulas proved in Fodor, Papvári and Vígh [2] and Fodor and Montenegro [3], and have consequences about L -convex floating bodies and relative affine surface area that have recently been investigated by Schütt, Werner and Yalikul [1].

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- [1] C. SCHÜTT, E. M. WERNER AND D. YALIKUN, Floating bodies for ball-convex bodies, *J. Lond. Math. Soc. (2)* **112(6)** (2025), Paper No. e70387, 1–27.
- [2] F. FODOR, D. I. PAPVÁRI, AND V. VÍGH, On random approximations by generalized disc-polygons, *Mathematika* **66(2)** (2020), 498–513.
- [3] F. FODOR AND N. A. MONTENEGRO PINZÓN, Series expansions for random disc-polygons in smooth plane convex bodies, *J. Appl. Probab.* **61(4)** (2024), 1407–1423.