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Disc-polygonal approximations of planar spindle convex sets

We shall work in the Euclidean plane. $S \subset E^2$ is a compact, spindle convex set if and only if S is the intersection of closed unit circles. The intersection of finitely many unit circles is called a disc-polygon. Assume that S has C^2 smooth boundary, and let P_n be a disc-polygon with at most n vertices inscribed in S such that P_n has maximal area. We prove an asymptotic result on the area of $S \setminus P_n$ as n tends to infinity. Similar results are given for circumscribed disc-polygons, and for the perimeter-deviation metric and the Hausdorff-metric. This is joint work with Ferenc Fodor.