Rooted edges of a minimal directed spanning tree on random points

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Abstract

For n i.i.d. uniform points in $[0,1]^d$, $d \geq 2$, let L_n be the total distance from the origin to all the minimal points under the coordinate-wise partial order (this is also the total length of rooted edges of a minimal directed spanning tree on the given n random points). For $d \geq 3$, we establish the asymptotics of the mean and the variance of L_n, and show that L_n satisfies a central limit theorem, unlike in the case $d = 2$.

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