

# Diminishing processes

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Let  $\Xi_0 = [-1, 1]$ , and define the segments  $\Xi_n$  recursively in the following manner: for every  $n = 0, 1, \dots$ , let  $\Xi_{n+1} = \Xi_n \cap [a_{n+1} - 1, a_{n+1} + 1]$ , where the point  $a_{n+1}$  is chosen randomly on the segment  $\Xi_n$  with uniform distribution. For the radius  $\rho_n$  of  $\Xi_n$  we prove that  $n(\rho_n - 1/2)$  converges in distribution to an exponential law, and we show that the centre of the limiting unit interval has arcsine distribution. We also consider the higher-dimensional analog of the problem.