

Random gluing polygons

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We consider an oriented closed surface obtained by randomly glued n polygons along their sides. The total number of sides are supposed to be an even number N and the resulting surface can be encoded by a random permutation γ of $[N]$. We show that γ is distributed asymptotically (as $N \rightarrow \infty$) uniformly among either even or odd permutations depending on parities of N and n . Then we study the distribution of the genus of the surface obtained and show that asymptotically it is normal Gaussian distribution with mean $(N/2 - n - \log N)/2$ and variance $(\log N)/4$.

This is a joint work with Boris Pittel.