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*Distances in random Apollonian network structures.* (English. French summary) Zbl 1393.05247


Summary: In this paper, we study the distribution of distances in random Apollonian network structures (RANS), a family of graphs which has a one-to-one correspondence with planar ternary trees. Using multivariate generating functions that express all information on distances, and singularity analysis for evaluating the coefficients of these functions, we prove a Rayleigh limit distribution for distances to an outermost vertex, and show that the average value of the distance between any pair of vertices in a RANS of order $n$ is asymptotically $\sqrt{n}$.

For the entire collection see [Zbl 1173.05001].

**MSC:**

- 05C82 Small world graphs, complex networks (graph-theoretic aspects)
- 05C12 Distance in graphs
- 05C80 Random graphs (graph-theoretic aspects)

**Keywords:**

formal power series; random networks; distance; singularity analysis

**Full Text:** Link arXiv