

Fixed sets of iterated (multi)function systems driven by Erdős-Rényi graphs

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Our paper focuses on a new approach to the construction of graph sequences driven by Erdős-Rényi graphs. Using iterated function systems (briefly IFSs) and iterated multifunction systems (briefly IMSs) we build graphs sequences generated initially based on an arbitrary Erdős-Rényi graph. We analyze the graphs sequences gotten within the iterations an IFS and two IMSs. We specially analyze the density properties between those graphs which are in the same sequence.

The main aim of our paper is to analyze the fixed sets of the IFS and the IMSs associated to the Erdős-Rényi graphs. We characterize the fixed sets using the Sierpiński gasket which we interpret as the limit of the constructed graph sequences. We also discuss an extension to random hypergraphs using higher dimensional IFSs and IMSs in spite of the greatest number of nodes in an edge in the hypergraphs. We characterize the fixed sets of the higher dimensional IFSs and IMSs using the Menger sponge.

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