

# A Classification of Isomorphism-Invariant Random Digraphs

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(joint work with Elvan Ceyhan)

## Abstract

We classify isomorphism-invariant random digraphs according to where randomness resides, namely, arcs, vertices, and vertices and arcs together which in turn yield arc random digraphs (ARD), vertex random digraphs (VRD) and vertex-arc random digraphs (VARD), respectively. This digraph classification can be viewed as an extension of the classification of isomorphism-invariant random graphs. We introduce randomness in the direction of the edges of a given graph and obtain direction random digraphs (DRD) as well. We classify DRDs according to which component is random in addition to the direction and study the relations of DRDs with VARDs, VRDs and ARDs. We also consider random nearest neighbor digraphs and determine their membership with respect to these digraph families.

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