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On the use of generating trees in a variety of combinatorial classes

We present a variety of combinatorial classes which can all be represented using arc diagrams: matchings, set partitions, permutations, RNA pseudostructures and Skolem sequences. Then by describing a more general object, namely open arc diagrams, we are able to employ generating trees to exhaustively generate and enumerate each of these classes according to various parameters, including nestings, crossings, and arc lengths. Presenting a unified method for the generation of such parameterized combinatorial classes is our central task.