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*Combinatorics in arc diagrams: crossings, nestings and topology*

A variety of combinatorial objects, including matchings, set partitions and permutations, can be modelled using arc diagrams—a set of vertices on a horizontal line with arcs possibly connecting them. There are two natural ways to parameterize these diagrams: 1) by considering the number of arcs that mutually cross (crossings), and 2) by genus. We explore (also using nestings, an additional companion statistic to crossings) these two methods from an enumerative standpoint, providing links between them where appropriate.