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Enumerating Positions of Distance Games

Combinatorial games are two player games with no chance elements and no hidden aspects. Distance Games are a class of combinatorial games in which pieces are placed on a board such that they are the proper distances from previously placed pieces. The polynomial profile of a game on a graph encodes the number of positions with a fixed number of vertices from each player. We extend previous work on finding the polynomial profile of the games Col, Snort, and Cis played on paths to other types of graphs. We also give recursions and generating functions for the polynomial profiles of generalizations of these three games when played on paths.