

DNA rearrangements through spacial graphs
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Motivated by recent models for DNA rearrangements we investigate smoothings on graphs that consist of only 4-valent and 1-valent rigid vertices, called assembly graphs. An assembly graph can be seen as a representation of the DNA during certain recombination processes in which 4-valent vertices correspond to the alignment of the recombination sites. A single gene is modeled by a polygonal path in an assembly graph. A polygonal path makes a "right-angle" turn at every vertex, defining smoothing of the 4-valent vertices and therefore modeling the recombination process. We investigate properties of these graphs, smoothing of their vertices, and the relationship to known smoothings in virtual knot diagrams.