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Nataša Jonoska and **Masahico Saito*** (saito@usf.edu). *Modeling DNA assembly by 4-regular rigid vertex graphs.*

DNA assembly in certain kinds of ciliates can be modeled by graphs with 4-valent rigid vertices, possibly with end points. Such a graph can be described by double occurrence words (unsigned Gauss codes), that are used in knot theory. Assembled DNA segments are modeled by certain types of paths in graphs called Hamiltonian polygonal paths, and the recombination is modeled by smoothings of vertices. Some properties of such graphs motivated from DNA assembly are discussed, such as the minimum number of polygonal paths, genus ranges, and word reductions. (Received January 24, 2014)