On reduced unicellular hypermonopoles

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Abstract

The problem of counting unicellular hypermonopoles by the number of their hyper-edges is equivalent to describing the cycle length distribution of a product of two circular permutations, first solved by Zagier. The solution of this problem has also been used in the study of the cycle graph model of Bafna and Pevzner and of related models in mathematical biology. In this paper we develop a method to compute the finite number of reduced unicellular hypermonopoles of a given genus. The problem of representing any hypermap as a drawing is known to be simplifiable to solving the same problem for reduced unicellular hypermonopoles. We also outline a correspondence between our hypermap model, the cycle graph model of Bafna and Pevzner, and the polygon gluing model of Alexeev and Zograf. Reduced unicellular hypermonopoles correspond to reduced objects in the other models as well, and the notion of genus is the same.

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