Graz University of Technology

Institut für Optimierung und Diskrete Mathematik

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A generalization of the quadrangulation relation to constellations and hypermaps

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Constellations and hypermaps generalize combinatorial maps, i.e., embeddings of graphs in a surface, in terms of factorizations of permutations. In this talk, we extend a result of Jackson and Visentin (1990) stating an enumerative relation between quadrangulations and bipartite quadrangulations. We show a similar relation between hypermaps and constellations by using a result of Littlewood on factorization of characters. A combinatorial proof of Littlewood's result is also given. Furthermore, we show that the coefficients in our relation are all positive integers, hinting at the possibility of a combinatorial interpretation. Using this enumerative relation, we recover a result on the asymptotic behavior of hypermaps obtained by Chapuy (2009).

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