N-flips and chromatic number in even triangulations on the projective plane

Yuki Kawasaki*, Atsuhiro Nakamoto, Yokohama National University

A *triangulation* G on a closed surface F^2 is a simple graph embedded on F^2 such that each face of G is triangular. A triangulation is *even* if each vertex has even degree. For an even triangulation, we define two local transformations, called an *N-flip* and a *P_2-flip*, which transform an even triangulation into an even triangulation. Although the two operations do not always preserve the chromatic number of even triangulations, in this talk, show that any two 4-chromatic even triangulations T_4 and T_4' on the projective plane N_1 with $|V(T_4)| = |V(T_4')| \geq 11$ can be transformed into each other by the two operations preserving the chromatic number and the simpleness of graphs. On the other hand, we showed that the same fact holds in 3- and 5-chromatic even triangulations on N_1 if the number of vertices is 17 and over in the last year. It is known that the chromatic number of even triangulations on N_1 is $3, 4$ or 5. Hence any two even triangulations T and T' on N_1 with $|V(T)| = |V(T')| \geq 17$ can be transformed into each other by N- and P_2-flips preserving the chromatic number and the simpleness of graphs. In this talk, we discuss the operations and the chromatic number in even triangulations on N_1.

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