

KEMPE EQUIVALENCE OF TRIANGULATIONS ON SURFACES

Atsuhiko Nakamoto

`nakamoto@ynu.ac.jp`

Yokohama National University, Japan

(This talk is based on joint work with Naoki Matsumoto and Kyosuke Wakayama.)

Two k -colorings of a graph G are *Kempe equivalent* if they can be transformed into each other by a sequence of “Kempe changes”, which interchange two colors in a component of the subgraph of G induced by the vertices colored with these two colors. Fisk proved that any two 4-colorings of a 3-colorable plane triangulation are Kempe equivalent. In this talk, we prove that for any $k \geq 3$, any two k -colorings of a 3-colorable projective-planar triangulation are Kempe equivalent, where the cases $k = 3$ and $k \geq 6$ are straightforward, and the case $k = 4$ was proved by Matsumoto. Moreover, we also show a result on Kempe equivalence of 4-colorings of a certain plane triangulation, which yields a weaker version of two open problems concerning 4-colorings of a plane triangulation with exactly two odd-degree vertices, and 3-colorings of triangle-free planar graphs.