Sufficient forbidden immersion conditions for graphs to be 7-colorable

S. Maezawa[(1)]

[(1)] Nihon University, Tokyo, Japan

A graph H is an *immersion* of a graph G if there exist an injective function $f_1 : V(H) \to V(G)$ and a mappign f_2 from the edges of H to paths of G satisfying that

- for $uv \in E(H)$, $f_2(uv)$ is a path connecting $f_1(u)$ and $f_1(v)$ and
- for edges $e, e' \in E(H)$ with $e \neq e'$, $f_2(e)$ and $f_2(e')$ are pairwise edge-disjoint.

In analogy with Hadwiger's conjecture, Abu-Khzam and Langston [1] proposed the follwoing conjecture : every graph with no K_t as an immersion is $(t-1)$-colorable. Lescure and Meyniel [2] proved the conjecture for $t = 5, 6$ and DeVos, Kawarabayashi, Mohar, and Okamura [3] proved the conjecture for $t = 7$. In this talk, we discuss the conjecture for $t = 8$.

References

[1] F. N. Abu-Khzam and M. A. Langston, Graph coloring and the immersion order, in: Computing and Combinatorics, in: Lecture Notes in Comput. Sci., vol. 2697. Springer, Berlin, 2003, pp. 394–403.

[2] F. Lescure and H. Meyniel, On a problem upon configurations contained in graphs with given chromatic number, Graph theory in memory of G. A. Dirac, 325–331, Ann. Discrete Math., 41, North-Holland, Amsterdam, 1989.

[3] M. DeVos, K. Kawarabayashi, B. Mohar, and H. Okamura, Immersing small complete graphs, *Ars. Math. Contemp.* **3** (2) (2010) 139–146.