Edge-transitive graphs of valency twice a prime have a semiregular automorphism

Wenjuan Luo
Capital Normal University
2210501002@cnu.edu.cn

The Polycirculant conjecture asserts that every vertex-transitive digraph has a semiregular automorphism whose cycles all have the same length. Similarly, in [1] the authors asked if every connected regular edge-transitive graph admits a semiregular automorphism. So we investigate wether edge-transitive graphs of valency twice a prime have a semiregular automorphism. We prove that G-half-arc-transitive graphs of valency twice a prime have a semiregular automorphism where G is a automorphism subgroup of the graph. Moreover, we prove that G-semisymmetric graphs of order twice a square-free integer with valency twice a prime have a semiregular automorphism.

References

[1] M. Gicdici, P. Potočnik and G. Verret, Semiregular automorphisms of edge-transitive graphs, *J. Algebraic Combin.* **40** (2014), 961–972.