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The Turán number for cycles of lengths congruent to 0 and 2 mod k

We present minimum degree conditions which forces a graph to contain a cycle of length ℓ modulo k for fixed k and ℓ. Our outcomes improve the results of Gao, Huo, Liu and Ma [2]. Consequently, we determine the maximum number of edges in a graph that does not contain a cycle of length 0 modulo k for odd k and in a graph that does not contain a cycle of length 2 modulo k also for odd k.

This is joint work with Yandong Bai, Andrzej Grzesik, and Binlong Li.

References

[1] Y. Bai, A. Grzesik, B. Li, M. Prorok, *Cycle lengths in graphs of given minimum degree*.

[2] J. Gao, Q. Huo, C. Liu, J. Ma, *A unified proof of conjectures on cycle lengths in graphs*, International Mathematics Research Notices 10, 2022, pp. 7615–7653.