

ABOUT XOR-MAGIC GRAPHS

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XOR-magic graph labelings form a special subclass of group distance magic labelings. A simple connected graph of order 2^n is called an *open* (respectively, *closed*) *XOR-magic graph of power n* if its vertices can be labeled bijectively with vectors from $(\mathbb{Z}_2)^n$ such that the sum (over $(\mathbb{Z}_2)^n$) of labels in each open (respectively, closed) neighborhood of every vertex is equal to the zero vector.

In [1], Batal asked whether there exists any odd-regular open XOR-magic graph or any even-regular closed XOR-magic graph. In this talk, we answer this question in the affirmative.

References

- [1] A. Batal, *On the construction of XOR-magic graphs*, Discrete Applied Mathematics 379 (2026), 288–315.
- [2] S. Cichacz, H. Grochowski, R. Zuazua, *Open XOR-magic odd graphs and closed XOR-magic even graphs*, arXiv:2512.19278