ON THE TOTAL CUT COMPLEXES OF CHORDAL GRAPHS

RAHIM ZAARE-NAHANDI
UNIVERSITY OF TEHRAN

rahimzn@ut.ac.ir

DEDICATED TO PROFESSOR FRANCESCO PAPALARDI ON HIS 60TH BIRTHDAY

ABSTRACT. For a graph G, Bayer et. al. [1] defined the *total k-cut complex* of G, denoted by $\Delta_k^t(G)$, to be the simplicial complex whose facets are the complements of independent sets of size k in G. These authors proved that $\Delta_k^t(G)$ is vertex decomposable for all k if and only if G is a chordal graph. It is shown that if G is chordal graph then the Alexander dual of $\Delta_k^t(G)$ is also vertex decomposable for all k. In particular, this answers the open part of a couple of conjectures by Fröberg on Cohen-Macaulay property of the Alexander dual of total cut complexes of paths and squared paths. In this talk, after some basic background, a sketch of the proof of this result will be presented.

REFERENCES

1. Bayer, M., Denker, M., Milutinović, M. J., Rowlands, R., Sundaram, S., Xue, L.: Total cut complexes of graphs. Discrete Comput. Geom. (2024). https://doi.org/10.1007/s00454-024-00630-4.