Weighted Spanning Tree Enumerators of Complete Colorful Complexes

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A complete colorful complex on r colors is an $(r - 1)$-dimensional simplicial complex whose vertices are partitioned into r disjoint color classes, and whose facets are all the sets (of size r) containing exactly one vertex of each color. Adin enumerated the k-dimensional spanning trees of complete colorful complexes for all $k \leq r$, and Ehrenborg and van Willigenburg counted weighted spanning trees of complete bipartite graphs ($r = 2$). We find a factorization of a weighted enumeration of top-dimensional spanning trees of complete colorful complexes, for any r.