

THE v -NUMBER OF GENERALIZED BINOMIAL EDGE IDEALS OF SOME GRAPHS

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ABSTRACT. Let G be a finite connected simple graph, and let $\mathcal{J}_{K_m, G}$ denote its generalized binomial edge ideal. By investigating the colon ideals of $\mathcal{J}_{K_m, G}$, we derive a formula for the local v -number of $\mathcal{J}_{K_m, G}$ with respect to the empty cut set. Furthermore, we classify graphs for which this generalized binomial edge ideal has v -numbers 1 or 2. When G is a connected closed graph, we compute the local v -number of $\mathcal{J}_{K_2, G}$ by generalizing the work of Dey et al. Additionally, under the condition that G is Cohen–Macaulay, we derive formulas for the v -number of $\mathcal{J}_{K_m, G}$ and $\mathcal{J}_{K_2, G}^k$, and show that the v -number of $\mathcal{J}_{K_2, G}^k$ is a linear function of k .