

The path ideal of a tree and its properties

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Abstract

Given a tree Γ , we consider the path ideal $I_t(\Gamma)$, that is, the ideal where every generator corresponds to a path of length t in Γ . When this path ideal is regarded as a facet ideal of a simplicial complex, that is, we view every generator of the path ideal as a facet of this simplicial complex, we show this simplicial complex is actually a simplicial tree. By using a property of a simplicial tree due to Faridi, we prove that $R/I_t(\Gamma)$ is sequentially Cohen-Macaulay.