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Rimpa Nandi* (rimpanandi0610@gmail.com), Nivedita Hall of Residence, IIT Kharagpur, Kharagpur, WestBengal 721302, India, and **Ramakrishna Nanduri**. *On Betti numbers of toric algebras of certain bipartite graphs.*

Suppose G be a finite simple graph with vertex set $V = \{x_1, x_2, \dots, x_n\}$ and edge set $E = \{e_1, e_2, \dots, e_q\}$. Let $S = K[x_1, \dots, x_n]$ and $R = K[T_1, \dots, T_q]$ be polynomial rings, where k is a field. Define a homomorphism $\phi : S \rightarrow R$, $\phi(T_i) = x_{i_1}x_{i_2}$ where $e_i = \{x_{i_1}, x_{i_2}\} \in E$. Then the $\ker(\phi)$ is known as the *toric ideal* of G and denoted by I_G and $k[G] = R/I_G$ is known as the toric algebra of G . In this talk, we compute the graded Betti numbers of toric algebras of certain bipartite graphs $G_{r,s,d}$. We achieve this by showing that the successive colon ideals of the initial ideal of $I_{G_{r,s,d}}$, $\text{in}_{<}(I_{G_{r,s,d}})$ with respect to reverse lex order are complete intersection ideals generated by d elements with at least $(d - 1)$ elements of degree 1 and at most one element of degree $r - 1$. Using this property we determine explicitly the graded Betti numbers of $\text{in}_{<}(I_{G_{r,s,d}})$. Also we show that $I_{G_{r,s,d}}$ and $\text{in}_{<}(I_{G_{r,s,d}})$ have the same graded Betti numbers. As a consequence, we explicitly determine the Castelnuovo-Mumford regularity, Hilbert series and multiplicity of $k[G_{r,s,d}]$. (Received September 09, 2019)