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Luigi Ferraro* (ferrar1@wfu.edu), **Frank Moore** and **Desiree Martin**. *The Taylor Resolution over a Skew Polynomial Ring*.

Let I be a monomial ideal in the polynomial ring $R = k[x_1, \dots, x_n]$ over a field k . In her thesis, Taylor introduced a complex which provides a multi-graded free resolution for R/I as an R -module. Later, Gameda provided a differential graded structure on this complex while Avramov showed that this DG algebra admits a divided power structure. We generalize these results to monomial ideals J in a skew polynomial ring S . As an application we show that if one fixes the number of generators of the ideal J , then there are finitely many isomorphism classes for $\pi^{\geq 2}(S/J)$, where $\pi(S/J)$ is the homotopy color Lie algebra of S/J , an invariant which was introduced and studied by the first and last author in a different work. As a result it follows that there are finitely many possibilities for the Poincaré series of k over S/J , if the number of generators of J is fixed. (Received March 01, 2020)