The Ext algebra of a Brauer graph algebra
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Brauer graph algebras are generalizations of Brauer tree algebras, which were used, for group algebras $KG$ over a finite group $G$, to study blocks with cyclic defect groups. Brauer graph algebras have since played a major role in the classification of finite-dimensional self-injective algebras of tame representation type.

One of the fundamental questions is when is the Ext algebra of a given algebra itself finitely generated? This talk will describe the Ext algebra of a Brauer graph algebra, as well as discussing various generalizations of the Koszul property for Brauer graph algebras. We note that it is well-known that the Ext algebra of a Koszul algebra is generated in degrees 0 and 1, so is finitely generated. This is joint work with Green, Schroll and Taillefer.

In order to describe the Ext algebra, we use a theory of coverings of Brauer graphs which are compatible with coverings of Brauer graph algebras; this is joint work with Green and Schroll. In particular, we classify the coverings of Brauer graph algebras that are again Brauer graph algebras, and show that there is a tower of coverings so that any Brauer graph can be covered by a Brauer graph that has multiplicity function precisely 1, no loops and no multiple edges.