Ph. D. Thesis Defence

On the permutation modules of a certain class of diagram algebras

By

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Abstract

In this talk, I will discuss how permutation modules of certain diagram algebras can be broken down into simpler building blocks called Young modules. These diagram algebras, such as the walled Brauer algebras and Brauer algebras of type C, arise naturally in Schur–Weyl duality and connect the representation theory of symmetric and related groups. I will explain how we can describe the structure of these modules and give a condition that links the module categories of diagram algebras to those of their underlying group algebras. As a consequence, we show that these modules have cell filtrations and are relatively projective within this class.

References:

1. Sulakhana Chowdhury, Geetha Thangavelu. Comparing cohomology via exact split pairs in diagram algebras. Arch. Math. 125, 79–92 (2025).
2. Sulakhana Chowdhury, Geetha Thangavelu. Permutation modules of the walled Brauer algebras. [arXiv:2503.09406], (2025).
3. Sulakhana Chowdhury, Geetha Thangavelu. Construction of Young modules and filtration multiplicities of Brauer algebras of type SCS. [arXiv:2507.14078], (2025).

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Time: 4:00 PM, Venue: PSB 1104