



XIAMEN UNIVERSITY MALAYSIA

廈門大學 馬來西亞分校

Research Talk XMUM

STRUCTURE AND REPRESENTATION TYPE FOR CYCLOTOMIC QUIVER HECKE ALGEBRAS IN TYPE C

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Algebraic combinatorics, representation theory, and categorification, including the combinatorics and structure of quantum algebras such as quantum symmetric pairs and quiver Hecke algebras.

SPEAKER INTRODUCTION

Dr. Christopher K. Chung was a Postdoctoral Scholar at Okinawa Institute of Science and Technology, Okinawa. He was graduated from University of Virginia, Charlottesville, Virginia in 2020. Dr. Christopher K. Chung got his Master of Mathematical Sciences Australian National University, Canberra, ACT, and his Bachelor of Science with distinction at University of Michigan, Ann Arbor, Michigan in 2012.

ABSTRACT

Beyond type A, there is still much to understand about cyclo-tomic quiver Hecke algebras (also called KLR algebras in honour of Khovanov, Lauda and Rouquier). Recently, several useful tools have been developed to study their representation theory in (affine) type C. These include constructions of their Specht modules by Ariki, Park and Speyer, underpinned by combinatorics of multipartitions and tableaux in a manner analogous to type A, and of their graded cellular structure by Evseev and Mathas. In joint work with Andrew Mathas and Liron Speyer, we build on these ideas to calculate graded decomposition matrices in small ranks, and compute structures of many Specht modules. We will highlight some interesting examples where the observed behaviour looks quite different to what we see in type A. Additionally, with Berta Hudak we also have a Erdmann-Nakano type classification of the representation type of their block algebras in level one in terms of ‘defect’, which also contain novel features. If time permits, I will also touch on ongoing work extending this to type B.