universität wien

FAKULTÄT FÜR MATHEMATIK
Dekan Univ.-Prof. Dr. Radu Ioan Boţ

Einladung zur öffentlichen Defensio

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Thema der Dissertation

Cores, quotients and symmetric functions

Abstract:

We present contributions to the theory of symmetric functions in three different but closely related directions. The first of these concerns the action of certain operators, the Verschiebung operators, on various families of symmetric functions. In the Schur function case this dates back to work of Littlewood and Richardson, and is intimately related with the decomposition of an integer partition into its core and quotient. More recently, Lecouvey and, independently, Ayyer and Kumari provided similar expressions for the characters of the symplectic and orthogonal groups. We lift these to the level of universal characters and give a uniform generalisation involving a very general symmetric function defined by Hamel and King. The second direction concerns generalisations of Littlewood-type identities involving sums over partitions with empty 2-core. These formulae were recently conjectured by Lee, Rains and Warnaar as bounded Littlewood identities for Macdonald polynomials. We prove their conjectures in the Schur case using the powerful technique of virtual Koornwinder integrals developed by Rains and Warnaar. Finally, we provide combinatorial proofs of determinantal formulae, both of Jacobi–Trudi- and Giambelli-type, for skew symplectic and orthogonal characters. These are based on tableaux models for these skew characters given by Koike and Terada. Key in the proofs are the Lindström–Gessel–Viennot lemma and a modified reflection principle.

Prüfungssenat

Univ.-Prof. Mag. Dr. Andreas Cap
(Vorsitz, Universität Wien)

Univ.-Prof. Dr. Christian Krattenthaler
(Universität Wien)

Prof. Dr. Arvind Ayyer
(Indian Institute of Science)

Prof. Dr. Mark Wildon
(University of Bristol)

Zeit und Ort

Mittwoch, 4. Juni 2025, 11:00 Uhr

Online:

https://univienna.zoom.us/j/65667676454?pwd=wGByhq9Ay4faTFgSoPNU0qzXhxDpfJ.1

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