The Hong Kong University of Science and Technology

Department of Mathematics

MPhil THESIS EXAMINATION

Demazure crystals for flagged key polynomials

By

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ABSTRACT

One definition of key polynomials is as the weight generating functions of key tableaux. Assaf and Schilling introduced a crystal structure on key tableaux and related it to the Morse--Schilling crystal on reduced factorizations for permutations via the weak Edelman--Greene insertion. In this thesis, we consider generalizations of key tableaux and reduced factorizations depending on a flag. We extend the weak EG insertion to a bijection between our flagged objects and show that the recording tableau gives a crystal isomorphism. We prove that extending the Assaf--Schilling crystal operators to flagged key tableaux gives a Demazure crystal. As an application, we show that the weight generating functions of flagged key tableaux recover Reiner and Shimozono's definition of flagged key polynomials.

Date : **17 May 2024, Friday ***

Time : **10:00 a.m.**

Venue : **Room 1409 (Lifts 25/26) ***

Thesis Examination Committee

Chairman	:	**Prof. Quoc HO, MATH /HKUST**
Thesis Supervisor	:	**Prof. Eric Paul MARBERG, MATH/HKUST**
Member	:	**Prof. Ivan Chi Ho IP, MATH/HKUST**

(Open to all faculty and students)

The student's thesis is now being displayed on the reception counter in the General Administration Office (Room 3461).