

# Remote - Inequalities Defining Polyhedral Realizations and Monomial Realizations of Crystal Bases

*vendredi 22 novembre 2024 10:50 (50 minutes)*

Crystal bases  $B(\infty)$ ,  $B(\lambda)$  are powerful tools to study representations of Lie algebras and quantum groups. We can get several essential information of integrable highest weight representations or Verma modules from  $B(\lambda)$  or  $B(\infty)$ . To obtain such information from crystal bases, we need to describe them by combinatorial objects. The polyhedral realizations invented by Nakashima-Zelevinsky are combinatorial descriptions for  $B(\infty)$  in terms of the set of integer points of a convex cone, which coincides with the string cone when the associated Lie algebra is finite dimensional simple. It is a fundamental and natural problem to find an explicit form of this convex cone.

The monomial realizations introduced by Kashiwara and Nakajima are combinatorial expressions of crystal bases  $B(\lambda)$  as Laurent monomials in double indexed variables.

In this talk, we give a conjecture that the inequalities defining the cone of polyhedral realizations can be expressed in terms of monomial realizations of fundamental representations.

**Orateur:** KANAKUBO, Yuki (Ibaraki University)