第13回

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  - 題目：Polyhedral realization of crystal base $B(\infty)$ for $C^{(1)}_n$
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The crystal base has been realized by several methods but it is not so easy to obtain the explicit form. Polyhedral realization of crystal bases is one method for explicity realizing crystal bases, which was introduced by Nakashima and Zelevinsky. We can describe a vector in the crystal base $B(\infty)$ as a lattice point of certain convex polyhedron in an infinite $\mathbb{Z}$-lattice using this method. This method can be applied to the crystal base $B(\lambda)$ of the irreducible integrable highest weight module for symmetrizable Kac-Moody Lie algebras.

The polyhedral realizations of $B(\infty)$ are given when $\mathfrak{g}$ is arbitrary of rank 2, when $\mathfrak{g}$ is of type A_n and when $\mathfrak{g}$ is of type $A^{(1)}_{n-1}$ and Nakashima gave the polyhedral realizations of the crystal base $B(\infty)$ $(\lambda \in P_{+})$ of the irreducible integrable highest weight module when $\mathfrak{g}$ is the same cases as the above.

Hoshino obtain the polyhedral realizations of $B(\infty)$ and $B(\lambda)$ for B_n, C_n, D_n, E_6, E_7, E_8, and F_4. In my talk, we give the polyhedral realization of $B(\infty)$ for $C^{(1)}_n$ (Joint work with Hoshino and Nakada).