

Research Report (April, 2017 - March, 2018)

Enrollment from
April 2017

Department of Pure Mathematics and Applied
Mathematics

Yoshiki Kaneko

I. List of Papers

II. List of Talks

Yoshiki Kaneko, 「Introduction to Orbifolds」, 『Koriyama Geometry and Physics Days 2018』
23-24 February 2018, Nihon University.

III. Research Results in AY2017

By M. Guest, A. Its and C. Lin, it is known that the set of the Stokes data of tt^* -Toda equations in the case of $SL(n, \mathbb{C})$ is convex. Then I tried to prove this convex set is the image of the moment map from non-compact Lie group $SL(n, \mathbb{C})$. However M. Guest and N. Ho proved this convex set comes from the compact real form $SU(n)$ of $SL(n, \mathbb{C})$, so it became not to need to prove this statement. After that I tried to calculate the condition that the Stokes data became integer. In M. Guest's paper, they calculated the case of $SU(4)$ and $SU(5)$. Then I tried the general case $SU(n)$. However it was difficult to determine them because for each n the irreducible cyclotomic equations sometimes appeared and we cannot determine the conditions in general cases.

IV. Research Plan for AY2018

By S. Ceccoti and C. Vafa, it is known that some points whose Stokes data are integer are related to Quantum cohomology. In M. Guest's paper, they showed these relationships in the cases of $SU(4)$ and $SU(5)$. I will try to show other case, for example $SO(n)$. In addition, I will try to prove for simple Lie groups Frobenius conditions are equivalent to the condition that their all representations are real.