
Group 3 :

Tight universal quadratic forms

- Speaker : Mingyu Kim (Sungkyunkwan University)

- Abstract : For a positive integer n , let $\mathcal{T}(n)$ be the set of all integers greater than or equal to n . An integral quadratic form f is called tight $\mathcal{T}(n)$ -universal if the set of nonzero integers that are represented by f is exactly $\mathcal{T}(n)$. The smallest possible rank over all tight $\mathcal{T}(n)$ -universal quadratic forms is defined by $t(n)$. In this talk, we find all tight $\mathcal{T}(n)$ -universal diagonal quadratic forms. We also prove that $t(n) \in \Omega(\log_2(n)) \cap O(\sqrt{n})$. Explicit lower and upper bounds for $t(n)$ will be provided for some small integer n .

This is a joint work with Byeong-Kweon Oh.

AORC Monthly Seminar

May. 28 (Fri), 2021 @ AORC (Online)

AORC Monthly Seminar

- Object : Active collaboration within and between groups, fitting the aim of SRC
- Plan : Newly-joined researchers take pivotal roles.
- Operations Committee :
 - Jang Soo Kim (Committee Chair, Principal professor)
 - Bumtlee Kang (Group 1), Juyoung Jeong (Group 2), Myunghyun Jung (Group 3)

Program

- 2:00 - 2:50 pm : Mingyu Kim (Sungkyunkwan University) & discussion
- 3:00 - 3:50 pm : U-Keun Song (AORC Group 1) & discussion
- 4:00 - 4:50 pm : Min-Gyo Jeong (AORC Group 2) & discussion

Abstracts

Group 1 :

Refined canonical stable Grothendieck polynomials and their duals

- Speaker : U-Keun Song (AORC Group 1)
- Abstract : Grothendieck polynomials were introduced for studying the Grothendieck ring of vector bundles on a flag variety. These polynomials can be viewed as K-theoretic analogues of Schubert polynomials. These polynomials which is indexed by partitions can have combinatorial properties. Recently, many generalizations of the polynomials and its duals have been studied in various viewpoints. In this talk, we define refined canonical stable Grothendieck polynomials and their duals which unify several generalizations of Grothendieck polynomials. We also introduce combinatorial properties of the refined version of Grothendieck polynomials.

Group 2 :

A Torelli type problem for Logarithmic vector bundles on some smooth varieties

- Speaker : Min-Gyo Jeong (AORC Group 2)
- Abstract : Let $\mathcal{D} = \{D_1, \dots, D_m\}$ be an arrangement of smooth irreducible hypersurfaces with simple normal crossings on a nonsingular variety X . Then we can define the locally free sheaf $\Omega_X^1(\log \mathcal{D})$ that contains the differential 1-form Ω_X^1 as its subsheaf. One of interesting question with this bundle is to determine whether the map $\mathcal{D} \mapsto \Omega_X^1(\log \mathcal{D})$ is injective, so we can recover an arrangement $\mathcal{D}$ from the logarithmic bundle related to it. If the answer is true, then we call that $\mathcal{D}$ is an *arrangement of Torelli type*, and this problem is the so called *Torelli type problem*. In this talk, we introduce some pre-studies for this problem on some varieties, and present study progress on my interesting.