（英訳）

In the future, we would like to analyze the quotient singularity mainly using the wild McKay correspondence. The first problem is that the computational method of the wild McKay correspondence has not yet been established. The wild McKay correspondence is an equality connecting the stringy motive and the motivic integration on a certain moduli space, but it is difficult to compute both of them. I would like to establish a method for computing motivic integration, especially in the case of linear actions. If we can do so, it is hoped that we will be able to know the stringy motives through the wild McKay correspondence and handle a lot og information of stringy motives. The v-function, which is necessary for motivic integration, is a function from the etale extensions of local field to the rational numbers, but it is difficult to compute because it cannot be determined only from its ramification filtration. On the other hand, it is significant from the representation theory and number theory point of view to know how to compute the v-function, since it coincides with the Artin conductor in characteristic 0. If we know the value range of the v-function, we can compute the motivic integration by decomposing the moduli space into the parts that take each value. Hence it is also an important problem for computing motivic integration.

One of the information about quotient singularities from stringy motives is the class of the singularity. There are various pathological cases of quotient singularities in positive characteristic, and it is well known that there are cases where quotient singularities are worse than those in characteristic 0. I would like to investigate when such a bad singularities appears. Since the class of singularities is a fundamental concept used in minimal model program, it is important to know this. Also, the problem of when a crepant resolution exists is an open problem for characteristic 0, and I would like to consider this problem in positive characteristic by considering the class of singularities. In the case of a variety having a crepant resolution, it is known that the class of the variety obtained by the crepant resolution in Grothendieck ring of the varieties coincides with the stringy motive, and thus its Euler characteristic can be computed from the stringy motive. I would like to investigate how Batyrev's theorem can be generalized in positive characteristic.

In addition, as one of the proofs of Batyrev's result in characteristic 0, Bridgeland-King-Reid's proof using the derived McKay correspondence is known, and I would like to try to generalize it to positive characteristic. In the characteristic 0, any element of the derived category has finite homological dimension, but in the case of positive characteristic, there exists an element with infinite homological dimension. Due to this fact, the generalization in positive characteristic has not been studied very much so far. I think that this problem can be avoided if one considers the action of a particular group scheme in the positive characteristic. In Bridgeland-King-Reid, the action of group scheme was not considered, and in this sense, I think that it opens up new possibilities.