

## Research Plan

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(I) A study of applications to Topological data analysis(=TDA).

I am a member of TDA Team (Team Leader: Y. Hiraoka) belongs to Center for Advanced Intelligence Project, RIKEN. I work on an extension of persistent homology to multiparametric data, which was already written in ‘Abstract of the results of my research’. Namely, I will study the subject of the representation theory of multidimensional persistence modules.

**(I)-1:** First, I would like to make a further investigation of our result [10], [11] on multidimensional persistence modules, such as an extension of the theory, to complete an algorithm.

**(I)-2:** Second, I will study an algebraic generalization of the ‘Stability theorem’, which is one of the foundations of TDA with 1D persistence module. This endpoint is to extend this result to the setting of multidimensional persistence modules.