

## Tensor Categories and Related Topics

**Date:** July 6th

**Place:** A358 at Nagoya University

**Schedule and Speakers:**

10:00-10:50 Kenichi Shimizu (Shibaura Institute of Technology)

11:00-11:50 Henry Tucker (University of Southern California)

13:30-14:20 Yusuke Sawada (Nagoya University)

Kenichi Shimizu (Shibaura Institute of Technology)

Title:Introduction to the internal character theory

Abstract:The theory of tensor categories is highly developed by ideas of low-dimensional topology, subfactor theory, conformal field theory, etc. It is true that the group theory also gave many ideas to the theory of tensor categories, but there are still fundamental notions for groups that are not yet understood in the context of tensor categories. In this talk, I will explain the central notions of the character theory of finite groups can be written in terms of the Drinfel'd center of the representation category of a group. This observation allows us to define class functions, characters, conjugacy classes, the character table, etc. for a certain class of tensor categories. We then discuss possible applications of these notions to non-semisimple modular tensor categories.

Henry Tucker (University of Southern California)

Title:Frobenius-Schur indicators and modular data for singly-generated fusion categories

Abstract:Frobenius-Schur indicators provide an important invariant for fusion categories, especially for application to classification problems. Their values can be obtained from the modular data of the Drinfel'd center. In several important cases of singly-generated fusion categories this modular data is given by quadratic forms on some associated groups. This leads to the expression of the indicators as quadratic Gauss sums, which yields examples of fusion categories that are completely determined by their indicators. We will discuss the indicators of near-groups and Haagerup-Izumi categories following from the conjectures of Evans and Gannon regarding the modular data for the centers of these categories.

Yusuke Sawada (Nagoya University)

Title:Tensor category of  $W^*$ -bimodules

Abstract:For a von Neumann algebra  $M$ ,  $W^*$ -bimodules  $X$  is a Hilbert space defined the left and right action of  $M$ . For this action, the continuity is required with respect to the suitable topology. These  $W^*$ -bimodules consist a category  $Bimod - M$  and it is known that the relative tensor product of  $W^*$ -bimodules gives the structure of tensor category of  $Bimod-M$ . In this talking, we will introduce these topics.