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Shawn X. Cui, César Galindo, Julia Plavnik* (julia@math.tamu.edu) and **Zhengan Wang**. *On gauging symmetry of modular categories.*

In this talk, we will first give some basic definitions and examples of modular categories. These categories appear in many mathematical subjects such as topological quantum field theory, conformal field theory, representation theory of quantum groups, von Neumann algebras, and vertex operator algebras. In addition to the mathematical interest, a motivation for pursuing a classification of modular categories comes from their application in condensed matter physics and quantum computing

Gauging is a well-known theoretical tool to promote a global symmetry to a local gauge symmetry. In this talk, we will also present a mathematical formulation of gauging in terms of higher category formalism. Roughly, given a unitary modular category (UMC) with a symmetry group G , gauging is a 2-step process: first extend the UMC to a G -crossed braided fusion category and then take the equivariantization of the resulting category. This is a useful tool to construct new modular categories from given ones.

We will show through two concrete examples which are the ingredients involved in this process and we will explain the mathematical structures associated to it. (Received August 23, 2016)