短课程（1）：An invitation to topological orders and category theory

授课人：孔良（南方科技大学）、张智浩（中国科技大学）

摘要: Although it has been a well-known fact, for more than two decades, that the category theory is needed for the study of topological orders, it is still a non-trivial challenge for students and working physicists to master the abstract language of category theory. In this series talks, for those who have no background in category theory, we explain in great details how the structure of a (braided) fusion category naturally emerges from lattice models and physical intuitions. Moreover, we show that nearly all mathematical notions and constructions in fusion categories and its representation theory, such as (monoidal) functors, Drinfeld center, module categories and Morita equivalence, can all be derived from lattice models and physical intuitions. In this process, we also introduce basic notions and state important facts of topological orders, and clarify subtle issues or misunderstandings that are common in literature.

短课程（2）：Quantization and Factorization Algebra

授课人：李思（清华大学）、桂政平（ICTP）

摘要: We give an introduction to basic ideas and various recent mathematical developments about quantization that arises from quantum field theory and string theory. Several applications to geometry and topology，including recent work on factorization homology and index theory, will be discussed along the journey.

短课程（3）：Introduction to infinity categories

授课人：艾颖华（清华大学）

摘要：This talk will give a brief overview of the theory of infinity categories developed by Jacob Lurie, and study some basic examples of infinity category.

短课程（4）：A short introduction to homological mirror symmetry

授课人：周杰（清华大学）

摘要：This lecture series will be aimed at explaining some basics of homological mirror symmetry, with an emphasis on the descriptions and computations on the higher categorical structures.

Plan：

Lecture 1. Fukaya category

Lecture 2. Calculation on structure constants through examples

Lecture 3. Derived category of coherent sheaves

Lecture 4. Calculation on structure constants through examples

Lecture 5. Mirror symmetry via Fourier-Mukai transform