Mini-courses speakers

Week 1: **Dmitri Nikshych** and **Daniele Valeri**

Week 2: **Anna Beliakova, Emily Peters** and **Jethro van Ekeren**

Week 3: Conference

Week 4: **Simon Lentn**er and **Du Pei**

Anna Beliakova (University of Zurich)
*Algebraization of low-dimensional top*ology (4x1h)

Simon Lentner (University Hamburg)
Modular tensor categories, quantum groups and vertex algebras (4x1.5h).

Abstract: In a series of four lectures, I will try to explain the three topics in the title, from my perspective, and how they are connected. In the first lecture, I will give an introduction to modular tensor categories with a particular focus on the non-semisimple theory. In the second lecture, I will introduce quantum groups with the main topics being tensor categories and Nichols algebras, which are certain universal algebras that are associated to objects with braiding and have a natural root system structure. This is a natural perspective from the Hopf algebra structure theory and classification programs. In the third lecture, I will turn to mathematical physics, give an informal motivation to conformal quantum field theory and then an introduction to vertex algebras. In the fourth lecture, which will be more specialized, I will connect the dots from the first three lectures and explain the logarithmic Kazhdan--Lusztig conjecture which links quantum groups and certain vertex algebras. I will also discuss some of my own results in this area and my general research program.

Dmitri Nikshych (University Of New Hampshire)
Braided fusion categories (5x1h).

Du Pei (Harvard University)
VOAs from higher-dimensional QFTs (4x1.5h).

Emily Peters (Loyola University Chicago)
Diagrammatics in categories (5x1h).

Daniele Valeri (Sapienza Università di Roma)
W-algebras and Lax operators (4x1.5h).

Jethro van Ekeren (Universidade Federal Fluminense (UFF)
Affine W-algebras (4x1.5h).