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CENTRE for QUANTUM GEOMETRY of MODULI SPACES

DEPARTMENT of MATHEMATICS, AARHUS UNIVERSITY, DENMARK

# Summer School 1-5 August 2016

## *Introduction to BV-BFV quantization* by

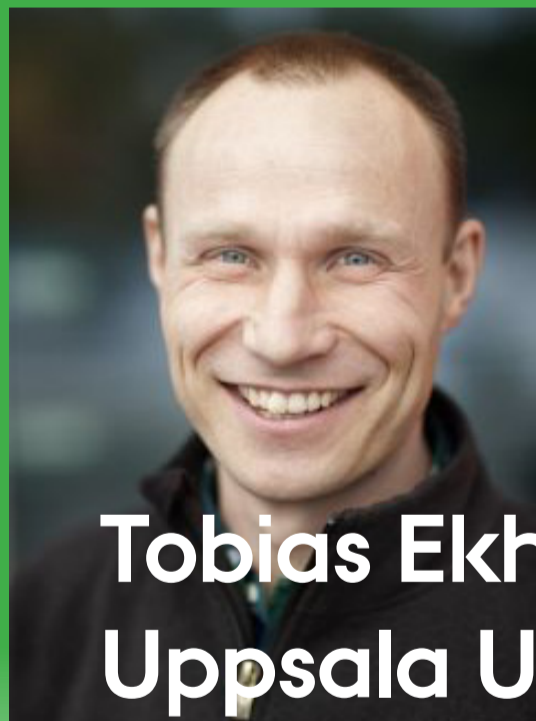


**Nicolai Reshetikhin**  
**UC Berkeley**

A brief recollection of facts about graded super-manifolds and BV integrals. Then the basic framework for BV-BFV quantization of gauge theories on space time with boundary will be introduced. After this we will focus on an example of topological quantum field theory on cell complexes: the discrete abelian BF theory. If time permits we will also discuss perturbative quantization of Poisson sigma model.

This session is a sequel to last year's masterclass on BV quantization.

## *Knot contact homology, Chern-Simons theory and topological string theory* by



**Tobias Ekholm**  
**Uppsala University**

An introduction to the basic concepts from contact topology. In particular we will define knot contact homology which is the Legendrian differential graded algebra of the unit conormal lift of a knot. We will mention how a non-commutative version of the Legendrian DGA with a pair-of-pants like product actually determines the knot class completely. We also introduce basic results from physics relating topological string and gauge theories.

We show how - after large N-transition - the augmentation variety of knot contact homology determines the Gromov-Witten disk potential of the Lagrangian conormal after large N transition.

We will outline a program for calculating higher genus amplitudes via a generalization of Legendrian contact homology, Legendrian Symplectic Field Theory. The program in particular involves topological recursion at infinity which determines higher genus amplitudes from refined disk amplitudes at infinity.

### Organisers

Jørgen Ellegaard Andersen  
Nicolai Reshetikhin  
Tobias Ekholm