Contribution ID: 1

## Decorated character varieties, Painlevé equations and quantization

## Abstract

In this lecture course I will introduce some notions in (quantum)Teichmuller theory for orientable non compact Riemann surfaces. We will then discuss colliding boundary components and discuss the Painlevé equations as an example. Finally we will link with the theory of Cherednik algebra.

Tentative schedule:

Lecture 1: Teichmuller theory for orientable non compact Riemann surfaces: Thurston shear coordinates, Fock decomposition, Goldman bracket and quantisation. Complexification and  $SL_2$ -character varieties.

Lecture 2: Colliding holes in orientable non compact Riemann surfaces. Bordered cusps, Teichmuller theory for Riemann surfaces with bordered cusps. Example: confluence of the Painlevé equations as hole collision. Quantisation.

Lecture 3: Cherednik algebra associated to the root system  $C_1$ . Basic representation. Spherical sub-algebra and Askey–Wilson algebra. Askey–Wilson polynomials and q-Askey scheme.

Lecture 4.  $C_1$  Cherednik algebra and sixth Painlevé equation. Confluence of the Painlevé equation as Whittaker degeneration of the  $C_1$  Cherednik algebra. Open problems.

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