CENTRO DE MATEMÁTICA
UNIVERSIDADE DO PORTO

GEOMETRY AND TOPOLOGY SEMINAR

Quantum Geometry of Moduli Spaces: The Hitchin–KZ equivalence

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Abstract. In physics, CS/WZNW duality is an equivalence between Chern–Simons gauge theory and WZNW conformal field theory first proposed by Witten in 1989. This statement was formalised by Beauville, Laszlo, and Pauly over the next decade by proving the vector space isomorphism between the geometric quantisation of the moduli space of flat connections, representing the Hilbert space of gauge fields between charges on a surface, with the Tsuchiya–Ueno–Yamada (TUY) space of conformal blocks, representing the conformal vacua between operator insertions corresponding to the charges. In quantum Chern–Simons theory, changes to the complex structure change the state via the (projectively flat) Hitchin connection, while the conformal blocks are governed by the TUY connection. In positive genus, these have been proven to be equivalent, but the genus 0 case was not covered. In this talk, I will present joint work with J. E. Andersen for projective equivalence of the two connections for the missing case of genus 0, where the TUY connection corresponds to the Knizhnik–Zamolodchikov connection. After an introduction to the topic, I will discuss our result, the ideas and obstacles of the proof, and conclude with some applications and future perspectives

TUESDAY, NOVEMBER 05	14H00	ROOM 1.09

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