Cumulants of Jack symmetric functions and b-conjecture (extended abstract)

Maciej Dolega[*1,2] and Valentin Féray[*3]

[1]Faculty of Mathematics and Computer Science [Poznan] – Faculty of Mathematics and Computer Science, Adam Mickiewicz University, Poznan, Poland, Poland
[2]Institute of Mathematics (WROCLAW) – Institute of Mathematics, University of Wroclaw, Pl. Grunwaldzki 2/4, 50-384 Wroclaw, Poland, Poland
[3]Institut für Mathematik [Zürich] – Winterthurerstrasse 190, CH-8057 Zürich, Switzerland

Abstract

Goulden and Jackson (1996) introduced, using Jack symmetric functions, some multivariate generating series $\psi(x, y, z; t, 1 + \beta)$ that might be interpreted as a continuous deformation of the rooted hypermap generating series. They made the following conjecture: coefficients of $\psi(x, y, z; t, 1+\beta)$ are polynomials in β with nonnegative integer coefficients. We prove partially this conjecture, nowadays called b-conjecture, by showing that coefficients of $\psi(x, y, z; t, 1 + \beta)$ are polynomials in β with rational coefficients. Until now, it was only known that they are rational functions of β. A key step of the proof is a strong factorization property of Jack polynomials when $\alpha \to 0$ that may be of independent interest.

[*]Speaker