Commun. Math. Phys. 163, 173–184 (1994)

Communications in
Mathematical
Physics

On Algebraic Equations Satisfied by Hypergeometric Correlators in WZW Models. I.

Boris Feigin[1], **Vadim Schechtman,**[2,⋆] **and Alexander Varchenko**[3,⋆]

[1] Landau Institute for Theoretical Physics, Moscow, Russia
[2] Dept. of Mathematics, SUNY at Stony Brook, Stony Brook, NY 11794, USA
[3] Dept. of Mathematics, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA

Received: 15 July 1993

Abstract. It is proven that integral expressions for conformal correlators in $sl(2)$ WZW model found in [SV] satisfy certain natural algebraic equations. This implies that the above integrals really take their values in spaces of conformal blocks.

Contents

1. Introduction

Let $\mathbb{P}^1$ be a complex projective line with a fixed coordinate z, $\mathbb{A}^1 = \mathbb{P}^1 - \{\infty\}$. Let $\mathfrak{g}$ be a complex simple Lie algebra with a fixed invariant scalar product $(\ ,\ )$ defining the symmetric invariant tensor $\Omega \in \mathfrak{g} \otimes \mathfrak{g}$, $L_1, \ldots, L_{n+1}$ its irreducible representations. Set

$$W = (L_1 \otimes L_2 \otimes \cdots \otimes L_{n+1})_{\mathfrak{g}}\,.$$

⋆ The second author was supported in part by the NSF grant DMS-9202280. The third author was supported in part by the NSF grant DMS-9203939