Twisted Yangians

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In recent years the Yangians of the classical Lie superalgebras (see [2], [3]) are being studied alongside with the Yangians of the simple Lie algebras ([1]). In this note we define a concept of so-called "twisted Yangian" as quantization of twisted algebra polynomial currents and consider some examples of such objects. One of the examples of the twisted Yangian considered here is the Yangian of the strange Lie superalgebra of Q_2. Here we define the quantum double of the Yangian of the strange Lie superalgebra in the case $n = 2$ (and corresponding twisted Yangian) and compute the formula for pairing for it in order to obtain the formula for the universal R-matrix of quantum double. The first main result is (see also [4]).

Theorem 1. *Yangian $Y(Q_2)$ isomorphic to Hopf superalgebra with unite over C (field of complex numbers), generated generators $\tilde{h}_m, k_m, x^{\pm}_m, \hat{x}^{\pm}_m, m \in Z_+$, which satisfyes the foolowing system of defining relations:*

$$[\tilde{h}_m, \tilde{h}_n] = 0; \quad [k_m, \tilde{h}_n] = 0; \quad \tilde{h}_{m+n} = [x^+_m, x^-_n];$$
$$[\hat{x}^+_m, x^-_2 k] = [x^+_2 k, \hat{x}^-_m] = k_{m+2k}; \quad [\hat{x}^+_m, x^-_{j,2k+1}] = [x^+_{i,2k+1}, \hat{x}^-_{j,m}] = 0;$$
$$[\tilde{h}_{k+1}, x^{\pm}_l] = [\tilde{h}_k, x^{\pm}_{l+1}] + (\tilde{h}_k x^{\pm}_l + x^{\pm}_l \tilde{h}_k), \quad [x^{\pm}_{k+1}, x^{\pm}_l] = [x^{\pm}_k, x^{\pm}_{l+1}] + (x^{\pm}_k x^{\pm}_l + x^{\pm}_l x^{\pm}_k),$$
$$[\tilde{h}_{k+2}, \hat{x}^{\pm}_l] = [\tilde{h}_{i,k}, \hat{x}^{\pm}_{l+2}] + (h_k \hat{x}^{\pm}_l + \hat{x}^{\pm}_l h_k), \quad [k_{m+2}, x^{\pm}_l] = [k_m, x^{\pm}_{l+2}] + (k_m x^{\pm}_l + x^{\pm}_l k_m),$$
$$[x^{\pm}_{k+1}, \hat{x}^{\pm}_l] = [x^{\pm}_k, \hat{x}^{\pm}_{l+1}] + (x^{\pm}_k \hat{x}^{\pm}_l + \hat{x}^{\pm}_l x^{\pm}_k), \quad [\hat{x}^{\pm}_{2k+1}, x^{\pm}_l] - [\hat{x}^{\pm}_{2k-1}, x^{\pm}_{l+2}] = 0$$

References

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[4] *Stukopin V.* Quantum Double of Yangian of "strange" Lie superalgebra // Symmetry, Integrability and Geometry: Methods and Applications. 2007. T. 3. C. 1 – 12.